for computer users who take out what are commonly referred to as

formination clause observe by the floxible lessor is separate from the main agreement with the ultimate lessor – the organisation that finances the lesse.

Flexible leases enable a leasee to

riexible leases ensure a lease to terminate a sevon-year lease after three or four years, but only if he replaces it with a machine from the flexible lessor. Lesses are urged in the article to check that the colorisms lease term on the

the minimum lease term on the second machine is stated in the main agreement, and that its lease rate is quoted in unambiguous

second machine on financial terms which will by then have become

action will be enacted to curb their activities.

The best known flexible lessor in the UK, Atlantic Lessing, refused to comment on any of the points made in the article except to say that it "generalised" and was "directed at the seven or eight one-man bands in the flexible lessing business".

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NEWS IN BRIEF

BM denies cancer risk

"flexible leases" has come from the prestigious Law Society Ga-zette, the weekly newspaper read by the majority of solicitors. IBM has denied reports by the Based on the experience of a solicitor who acted for a prospective flexible leasing customer, the Gazette article. In the November 12 edition, highlights the danger that arises when the early termination clause offered by the flexible leasor is senerate from the Banking Insurance and Finance Union that a toning substance used in its 3800 laser printer is a possible carcinogen. Union research assistant Andy

Egan said cautionary advice to his membership was based on a US Environmental Protection Agency report which indicated that the toning substance active principle trinitrofluorenene (TNF) was potentially hazardous.

Zilog presidency

ZILOG President Federico Paggin, has been moved to Exxon Enterprises' board, assuming control of the parent company's new Com-

puter Systems group.
Zilog vice-president Manuel
Fernandez will take over the The Gazette article points out that the company financing the lease has a seven-year lease which it considers to be binding, and that any request for cancellation will inevitably be met by the requirement to pay the balance of the outstanding rentals discounted at a market rate. nominal presidency but will report directly to Faggin, who retains control over Zilog's future. Zilog has denied any connection

between the managerial changes and losses made by the company market rate.

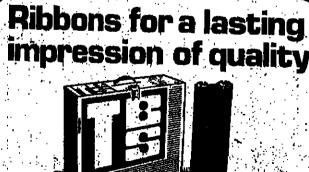
The article says that the lessee may be left in a difficult position dependent upon the flexible leasuntil earlier this year.

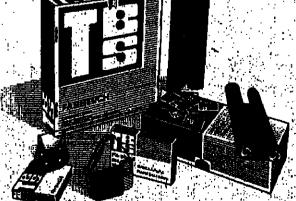
Phones for BBC

PYE Business Communications of Cambridge has announced a contract to supply the BBC with two computerised EBX8000 telephone exchanges. The contract is worth £2 million and the exchanges are scheduled for installation in BBC offices at Ealing and Shepherds Bush by mid-1982.

Fieth failure

A CASH shortage at point-of-sale supplier Fieth Ltd led to the liquidators being called in last Wednes-day. Telefusion owned 40% of company shares and have accepted a £600,000 write-off in relation to Fieth, whose assets along with 30 staff have been acquired by UCSL Microsystems, a Unilever sub-





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Flexible Type approval to go outside BT leases warning

prove equipment for attachment to concerning software-based cations pressure group has been set the telephone network, and also to license added-value services and the resale of transmission capacity, is to be given to the Secretary for Industry under the terms of the government's bill, just published, which sets up British Telecommunications as a suparate body from

the Post Office. In practice, type approval is to be carried out by an independent body acting "in consultation" with BT, expected to be either the British Standards Institution or the British Electrical Approvals

Under the Bill, which is expected to become law by next summer, British Telecom would have the right to maintain all PABXs and the first telephone instrument on any line, but is expected to subcontract much of this work to prirate industry.

BT has expressed keenness for getting into partnership with in-

THE power to approve or disap- dustry over this, especially • A powerful new telecommuni

The Industry Secretary would have power under the Bill to overrule the new corporation's decisions on maintainability of equipment and charges if he feels that "undue discrimination" is be-

Competing

In announcing that BT would have power to raise private capital for its investment programme but not by share flotation, Industry Secretary Sir Keith Joseph said he was even more chary of private monopolies than public ones. Partnerships like those entered into by BP would probably be involved.
The Post Office is empowered

under the Bill to provide electronic mail services that involve collection and delivery of hard copy. This could lead to BT and the Post Office providing competing ser-

up with the aim of uniting the efforts of all the others.

Called the Telecommunications Council, it has come out strongly against the British Telecommuni cations Bill which it considers

pointment to vigorous anger that this has been a lost opportunity," said Council chairman John Gorst, Conservative MP for Barnet and

the UK Industry Space Committee (covering satellites), the International Word Processing Association and seven non-official radio

leaves too much power in the hands of British Telecom. "The spectrum of reactions of members has ranged from disap-

The Council has so far enlisted the support of the Telecommunications Managers' Association (a professional body), the Business Equipment Trade Association (which represents IBM US, ICL and other major manufacturers),

Burroughs to lay off 335 staff

From the system builders.

he system builders' computer

Argus700 Series 2.

FERRANT

Computer Systems

FALL in demand for document encoding equipment and some line printers has led Burroughs to an-nounce plans to lay off 355 staff at its Cumbernauld plant in Scotland from next February. But the cuts are being offset in part by setting up a production line in Cumbernauld for the new B900 small busi-

Research and development at Cumbernauld is not being reduced, and the company asserts that demand for the other products it manufactures in the UK such as floppy discs, terminals and business forms is expanding.

The encoders made at Cumbernauld are used mainly in banking for printing on to cheques; the line

Amdahl launches H-series competitor

from Front Page

British Airways is already a major

ing company staying in business and honouring its obligations. If the flexible leasing company is wound up, the leases will be left with a long-term obligation on the original machine. Paralleling to some extent IBM's other moves at the time of the 3081 launch, Aindahl has cut the purchase prices of 470 machines by around 15% and added a bottom end model to the 470 family. It adds that even if the flexible option is exercised, the lessee will probably be committed to a Called the 470V7C, it is a degraded 7B and offers a performance comparable with the IBM 3033S. It can be field upgraded right up to very disadvantageous.

The article concludes that unless flexible lessing companies "put their own house in order" legislation will be enacted to curb their archites. the V/8 in the same way that a 3033S can end up as a 3033MP.

structions had been changed to contain slightly different wording,

verb.

The error was caused by an in-

struction "GOTO 52" in the original, which could no longer find a line 52 to go after the re-

Dunn, who runs the North-East TRS 80 Users Group, is more indi-gant about the inefficient modifi-

cation than he is about losing 20%

Although the version of Domi-noes bought by Dunn's friend for

royalties on pirated copies.

• from Front Page

Domino legal war

Amdahl's lease/purchase ratio on 470s was still well over 20, much igher than the new ratios on the

303X family.

But Amdahl customers wanting to replace their 470s with 580s will have to wait until April 1982 for first deliveries. Shipments of the 3081 (erroneously called the 3801 in part of last week's story due to a printing error) will start before the

As with the 3081, the 580 incorporates componentry with a substantial improvement in circuit density. The Fujitsu manufac-Commenting on the purchase

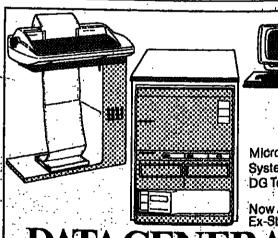
incorporate about 400 gates, and 121 are held on one 14-layer board called a Multiple Chip Carrier,

measuring only 5.6 cubic feet. A 580 system can be expanded to a configuration with 32 megabytes of main memory and 34 I/O channels. In addition, the uniprocessor version can be upgraded to a multiprocessor machine with two processors sharing a common bus

multiprocessor are designated the 5660 and 5680, respectively, the latter machine providing about 3.5 times the power of the V/8 while costing less than £4 million. Only eight MCCs are needed to make up the basic 580 machine and they are contained in a unit

As with the IBM 3081, the 589 employs 16K RAMs in main memory and intermixes special purpose RAM chips on the same boards as logic chips. They could be RAMs for registers, buffer sto-

announced what it describes as "a new class of firmware" called Ma-



Crossley sold the business car-lier this year but will be managing it until the end of the year. Harding remains unconvinced by the explanation, "We ordered

that it's not available and return

"We don't sell games without paying royalties" he stated, explaining that even in the case of Level IV Basic, where compensa-

tion was paid out of court, Kansas

had acquired the products from GTR Corp in the US, unaware of

their original source and believing

that they owned legal rights.

the cheque," Crossley added.

one through a third party and is arrived - we've got it here in the office" he said. "Crossley's had plenty of time to order since the las

£8.50 was said to have come from his company! Tom Crossley of Kansas City Systems explained that Kansas had never sold the case. We shouldn't have to spend more money pursuing this sort of business." orogram. "We place an advertisement for programs on dominoes and bridge business."

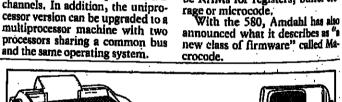
Since software copyright is not defined satisfactorily in law, Harding has spent a great deal in establishing his rights over coples of products for which Molimers hold sole distribution rights. eight weeks ago, but by the time it appeared we had decided not to

sell them as we didn't know who the source was and didn't want to take a risk" he said "If anyone orders it we tell them."

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ALL-BRITISH SYSTEM TO GO LIVE FOR REAL TIME STOCKBROKING

World first in share dealing

ciated central hardware costing a further £3 million. The system

NMW is the only bureau

supplying an online link to the Stock Exchange's Talisman system

completed parallel running in NMW client offices last Friday.

by Kevin Cahill

THE first real time stockbroking velop and cost £3 million, assoservice in the world will go live at Cheshire-based NMW next Monday. Called Capital, the system will provide real time processing including the production of share contracts for 35% of all UK-based Stock Exchange transactions.

Based on twin ICL 2972s, it has been designed around database agement system IDMS and what is described as a unique version of ICL's transaction proces-sing system called TPO 100, running under the VME/B operating

The software routes traffic output such as share-dealing brough the system at the rate of 1.8 message pairs per second with planned throughput of three pairs

utes on a batch basis. Capital would supp

to get the system operational required major changes to ICL's-VME/B intercommunications with

been working on the problem for a ournalising feature for IDMS which is now on general release. dual database concept with the main database updated at night

and daily transactions processed ecross an abstract of the database during the day.

Capital is intended to run eventually on a single database updated "on the fly." and with additional

Capacity

problems?

Running out of steam?

the impact of new work.

Hardware budgets frozen?

inew abblications in the bibeline.

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UK quoted stocks and 35,000 overseas stocks in its central database, the system operating in any All-inclusive NMW managing director Brian Johnson explained that Capital's kers offices in the UK and Ireland and services an end-client base of predecessor had been a mixture of over 800,000 users.
"NMW's profits this year will

be the highest in the company's history," according to Johnson. contracts provided every 30 min-

real time input and updating with

Capital would supply everything 1977 win-input, ledger updating and do-£415,603,

Previous highest results were in

"It was comparable," Johnson said, "to an airline booking system

that had 400 planes in the air at

Capital holds details of 20,000

year and developed a record level A FRESH challenge in the huge has included bit-slice technolog commercial minicomputer market in the componentry of the 8800 has appeared in the shape of a The machine's architecture con-The stockbroking system uses a powerful new, machine from US: company Datapoint. Its UK distri-butor, Ventek, has revealed next spring as the launch date for Data-point's first 16-bit processor, representing the company's expected move up-market to match competition like Wang's VS systems and

the Data General CS/300. inquiry facilities.

In line with many other 16-bit
Capital took four years to demachine manufacturers Datapoint

ment System, It can run either in standalone

point's previous top end machine, the 6600, and can share the same

To obtain this throughput and get the system operational reuired major changes to ICI/s. First 16-bit machine Briefing A joint ICL/NMW team has been working on the problem for a

sists of a central processor with up linked to separate periphera processors by a high speed but and direct memory access channels. The most important new soft

ware offering with the 8800, which has already been announced in the US, is a new operating system called RMS, Resource Manage-

mode or as part of a Datapoint Attached Resource Computer environment where several machines and their shared peripheral devices are linked by a coaxial cable. In addition to multi-tasking and multi-programming RMS provides facilities like hierarchical user defined levels of security and what are said to be virtually unlimited RMS is also supported by Data-

ARC links as the existing Data-point operating system, DOS. This facility enables unconverted files and programs to be used until new ones have been proved. US prices for the 8800 include \$88,000 for a 256K machine with a 202-megabyte disc drive.

Thomson to shed 5,000

> FRENCH telecommunications manufacturer Thomson CSF has begun a redundancy programme designed to shed 5,000 staff between now and 1983. Planning to avoid outright sackings if possible, it has offered voluntary redundancy payments of 15 months' salary which is expected to attract. 2,000 volunteers, and has agreed premature retirement on 70% of pay for employees over 56.

ICL jobs

IN our story on ICL redundancies on the front page last week we wrongly stated that the company had already issued redundancy notices. In fact, it announced that a 90-day consultation period with the unions involved had started. Redundancy notices will follow for staff who cannot be, redeployed.

£12½m plans

THE House of Fraser retail group has announced that its board has approved a £121/2 million proamme for a computer based anagement information system that will embrace order proces-sing, stock control, salaries and

INSIDE THIS WEEK'S CW ...

Downtime by Chad. State of Art Review. Attack on sales ethics Software File..... £1m compensation stor Union plan on ICL jobs... Micro News......

Company News.
People and Events
Date Analysis - Part 10...
Japanese scane
Office automation
Call for human interface.
Midlands jobe Sales Bit....

IOB OPPORTUNITIES: Pages 20-39



ter Resources for solving our first crossword last November. Thieves broke into his Richmond home and stole the 8K pet with a television set and photo-

graphic equipment worth £1,000. "They seemed to know exactly what they were after - high tech-nology stuff. I don't suppose we'll get the cameras and television back, but the Pet won't be quite so

easy to get rid of." Yate is doubly keen to reclaim his microcomputer as the thieves missed his tape library, including Basic programs jointly composed

Should anyone offer you Commodore Pet serial no 1005079, contact Richmond Police on 01-

PSS for UK banks

packet switching networks to the banking industry has been given a boost by a decision of the UK clearing banks to use British Telecom's Packet Switched Ser-

JOHNSON: capital will everything in real time.

frame systems in the new decentralised version of the Clearing Houses Automated Payments System, Chaps. Chaps in its original form, with

a central ICL 2960 mainframe, was scrapped early this year just before

had been selected to achieve freedom from the responsibility of network management, and to avoid the political problems of one bank having supervision of the network. Each mainframe will interface with PSS by a machine running

software designed primarily for auevaluation includes Tandem Non Stop machines while software houses being considered include Logica, Software Sciences and SPL.

The ICL ME29 was not consid-A spokesman for the new Chaps cred a suitable machine for the job

Turn Quay System

lengest refrigerated container facility at Tilbuny Dooks in Essex. Their minicomputer-based container control system is now en essential part of the delly routine. Vibuel displays provide interactive cango planning, taking into account variables such as cargo charecteristics and destination. Several hundred thousand units are handled annually.

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Thursday, December 4, 1980

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COMPUTERVIEW

THE Americans want to tell. The Scandingvians want to hear. The UK stands on the sidelines. The Japanese don't exist.

A slightly tongue-in-cheek summary perhaps, but one based on an analysis of the attendance figures at Infotech's State of the Art conference, in London last week.

Fifty-five per cent of the speakers, and none of the delegates, came from the US. Thirty-two per cent of the delegates and none of the speakers came from Scandinavia. Thirty-five per cent of the speakers and 20 per cent of the delegates came from the UK. There were no delegates or speakers

The conference, which drew a record attendance of 500 delegates from 19 countries and produced revenue of about £250,000 for the organisers, proved if nothing else, that not all aspects of the international conference market are dead.

After that, some of the best-known names in the industry, speaking four at a time, though in separate rooms, each tried to give his version of the current state of the computer industry and the prospects for the next

Although Infotech had the conference conceptually divided into four streams - on

State of the art remains undefined

sequence most of them seemed to spend their time dashing from speaker to speaker.

There was great certainty, especially among the hardware technologists, about both the pace and kind of development we would see in the Eighties — one million the problem. He most of all knew what he circuit VLSI devices by 1982, big processors

social impact of these developments, no one tained and used them.

the optimistic basis that any organisations sending delegates would send four, each of mode which can only be described as confeswhom would cover a separate stream — not many companies sent four delegates. In contract of MIS and what hadn't happened since computerised management information systems were going to solve all industry's problems in the 1970s.

wanted, an office without clerical staff, and on a chip by the mid-Eighties. It knew how he wanted it, with the files
But when it came to both the use for and

was sure. It was as though the speed of development in the Seventies, and the current recession with all its hardships, had systems. His method was in direct oppositions of the speed of t development in the Seventies, and the current recession with all its hardships, had combined to exhaust and confuse those who, like Gordon Bell, had done so much to like Gordon Bell, had done so much to the database methodology of file handling which was definitely the flavour of the conference, among both the hardware securing in Japan with the aim of putting on some kind of all-Japanese event in London.

Given that there was no speaker from Japan, and relying only on after-speech conversations which clearly indicated that the majority of hardware predictions were based on Japan as the supplier, at least one half of the "state of the art" for the next ten

years was missing.

What the Japanese might have said, had they been present, is hard to guess. But for those who heard Mr Azo from the Japanese Embassy speak at the BCS earlier this year, the short answer is, "a lot."

To be fair to Infotech, many of the poten

tially fascinating speakers working at the forefront of computer technology in Japan speak little or no English and the cost of providing simultaneous translation facilities for maybe two or three of them at last week's event would have been prohibitive.

On the other hand, all the papers at the IFIP conference in Tokyo in October wen presented in English, and generally speaking the Japanese speakers were just as

Cork is the Apple of their eye with the opening of Apple Computer's Cork plant, the city has been declared a prime location for which will develop a £15m plant

future computer industry developments by the Irish Industrial

March will develop a £15m on the outskirts of Cork City.

A microelectropies elopment Authority.

authority Padraic White said that Cork was on the verge of rapid about providing employment openings had begun with University College, Cork and the Regional Technical College.

IDA's rapid success recently in

firmed. Information gleaned at the

capability in supplying advanced systems for the Office of the

scheme for introducing automa-

tion in government offices, and by

drawing up specifications and standards in co-operation with the

Canadian Advanced Technology

Association.

will be stimulated by an ambitious ready.

A microelectronics research centre has been established at Uni-

Managing director of the wersity College, Cork, while the National Institute for Higher Education in Limerick has established a centre to investigate integrated circuits in computer techno

microelectronics implications for persuading major companies to invest in Ireland has been con-State research agencies.

Temple Engineering Sales has

tor of computer terminal cables by Fabrica Milanese Conduttori of Milan with a range including coaxial, twinaxial and multi-conductor

Ireland exported £1.5m worth of computer systems to the UK in June compared to £0.75m worth in June, 1979. Exports to the UK for January-

June 1980 totalled just over £11m, putting Ireland in second place to the US, which for the same period exported a massive £35.8m worth

 American peripheral manufacturer, Dataproducts Corp started work on its new 200,000 sq ft extension in Dublin recently.

Canada into Office of Future equipment and the hiring of kit for two local firms, Mitel and System-

> However the programme manager, Hans Brune, states it is accepted that some equipment will

To alleviate the shortage of The money which Communica- trained staff, a chair in office auto-



Cutting paper work

elèsman to sell. The system is based on the M50 hand-held terminal which can be

BHLGIUM has become the sixth Bell has bought a GBC 4085 on Prested viowdata system, with a companies to run pilot trials for in-house viewdata systems. The company also has a licence to cations equipment supplier?

BELL distributed by Bell Telephone for in-house viewdata systems. The company also has a licence to cations equipment supplier?

Belgium.

systems for the Office of the trials. It is intended that the equip-ruture, through a \$12.5 million ment should be obtained from house. Member companies of the Canadian Advanced Technology programme just launched by the Canadian firms, such as AES and lederal government's Department its subsidiary Wordplex which are study on how they can co-operate well established worldwide al- in a joint approach to office auto-

PANORAMIC view of historic Cork, whose present and future are en-meshed with high-level computer technology.

Fire hits systems show

A DISASTROUS fire at one of the world's largest hotels in Las Vegas brought a sud end to proceedings at nearby Comdex 80, the major US show for OEMs, systems houses and distributors. On the final day, half of the exhibition half used for the show was converted into an emergency centre for evacuees. Over 100 died in the

The first four days of the show. however, seemed to leave most exhibitors well pleased with the business transacted. A common observation was that most visitors were seriously interested in buying, rather than merely gathering in-

There were more than 350 exhibitors but little radically new hardware on show. As one vendor cuphemistically put it "The accent s on professionalism this year, rather than on novelty."

Software houses took 30 of the stands, and were mostly specialists in the microcomputer area, though a few firms including MCBA are well known in the mini world. Two British firms, CAP-CPP and Micro Focus, had stands, as did

Unix users widen Basic still has Speed of

ormation transmission. Consider de Neumann's

and B processors separated by a 300m optical path. Light will travel between them in one

When switching speeds

each one picosecond, a nedium-term possibility en-

pposite direction.
The two processors can store

Even at today's slower

"This point, however, is of little-

importance compared with the questions raised concerning your role in computer education. By

training your students on Ameri-

can equipment you are creating a

generation of computer users who are indoctrinated with the Digital

Equipment Corp philosophy, with an inevitable effect on the deci-

DOUGLAS J. M. BROMLEY

much to offer THE computer devised by Bernard de Neumann — an array of WITHOUT wishing to prolong discussion about the pros and cons of Pascal and Basic, I think David

CASE, etc — offers many of Pascal advantages.

It can produce smaller, more processors transmitting in formation to each other using beams of light (CW, November 13), has an interesting potential, unmentioned in your report, which uses beams of light for data storage as well as information transmission. It can produce smaller, more Barron (CW, November 6) may efficient Basic programs which can be used with or added to existing

LETTERS to the EDITOR

have misunderstood the point I was secking to establish programs. Furthermore, it is not a Pascal is a good "structured" language with many flexible feahypothetical language, as David Barron implied, since it is available now for Microsoft MBasic and DEC Basic +/Basic II users. It fluential in developing languages like Ada; however, I do not think it will replace Basic as a popular offers a simple extension to Basic which is effective and easy to anguage for the development of

systems on minis and micros. Any organisation choosing a sible to live with ordinary Basic programming language looks for while avoiding many of its probour main characteristics. They lems and enables good involve language features enabling the planned system to be de-"structured" programs to be de-veloped. But it is an interim "solu-tion" pending the arrival of such veloped, training courses, active support in the language by manu-facturers and a pool of trained perconstructs in the language itself.

If anyone has opinions on the
way Basic should develop, please

sonnel to initiate the systems. Pascal meets the first two criteria but does not receive active upport from most mini and micro ufacturers. Also, there are few Pascal programmers compared to

There is low demand for Pascal programmers, a fact made clear by canning appointments pages in

Only a brave organisation would choose Pascal when there are only limited possibilities of finding trained staff, I feel this militates against Pascal gaining wider

On the other hand, Basic has active support and trained staff are available. Basic does suffer disadvantages vis à vis Pascal in many respects, the most obvious defect being lack of ready comprehen-

Keep up the hand-outs!

YOU ask what can be done with Surely any paper that is not top manufacture.

used computer paper,

I am a nursery teacher, and I schools and playgroups in the area, and therefore have no axe to don't know how I would survive

URSULA DANIELS

DOUGLAS I M. BROMLEY without generous handouts of computer paper. It means that despite cutbacks in education I don't need to be miserly with paper when it comes to drawing, cutting, and even painting. Young children can get through reams of it.

material in the hope of getting de-sirable changes implemented. switching speeds, large amounts of information could be stored on light beams in DAVID BURDETT G. BEACON Senior Consultant

write to me so that I may collate

Students 'indoctrinated

BRLOW is a copy of a letter I have your own resources and those of ust written to the Principal of the many computer suppliers who do not offer products of this type.

"Some days ago the computer Press reported that your estab-lishment intended to purchase a minicomputer, asking those in-terested to apply for the invitation

"I received this document today and was surprised to learn that your requirement is for a Digital Equipment Corp PDR-11 compuprocessor which implements not making this clear in your Press involved in buying data processing DOWHILE, IF-BLSE-ENDIF, amount of the processing machines.

(1984 and all that . . . Talls week's example of the firsings things people say in the media about computers was sent in by Francis Chambers of Westport, Co. Mayo, who

The East Cork town of Cerriptwohilits to have a new £18m industry with a potential employment of £60 workers, it was announced vesterday by the Minister to Lahdur Mr Gene Fitzgereld.

The Nashus Corporation of the United States plans to manufacture class which are used for the argage of institution in the computer and date processing indilatries.

their horizons WITH reference to your recent some guidelines as to the type and

special Software File on Unix, I should point out that Unix is in use outside the US, and that other Unix user groups exist (Canada, Australia and ourselves in Europe). As you correctly point out, Unix is at present most heavily used in academic circles, but this has arisen due to Bell's (Western Electric's) unusually favourable licensing terms and not because "the academics don't

isaged in your pages, it will be easible to have up to one ma-jabit of information moving gabit of information moving from A to B and another in the two megabits of information in the intervening space by retransmitting their received in-

form of user interface that w would like to see. The Unix-like system vendors approached have been most receptive. The user group itself has re

cently generated a distribution of Unix V7 for small (non-separate instruction and data space) PDP-11s, since Bell does not support them any longer and this has been given with equal favour to scademic and commercial sites. I mention these items in an atreally want the outside world to tempt to show that the European

The Buropean Unix User Group has recently decided to widen its horizons and to become a Unix and Unix-like systems user group. In this much wider context the lack of standardisation can give rise to great problems in software porta-bility, and we are currently looking at this problem. Equally important to moving software around is the problem of moving personnel and we hope to give

sions that are occurring in the The active academic communi has much to gain from interaction with the outside world and, I believe, has much to offer in return.
ALAN MASON

' European Unix User Group.

group, at least, is keen to en-

courage both types of members and would not wish to see the divi-

Woolwich system works

THE paragraph that describes the Woolwich system (Building Socie-ties article, CW, October 28) im-plies that the pilot scheme in early

1979 suffered so much from the Post Office disputes that we are not going to implement anything more until the early part of 1981.

For the record, we have M branches currently operational and we shall complete the remaining branches by the end of March. Asst. General Menager (DF) Woolwich Equitable Building Society.

I AM currently writing a book on Portable Programming and have received the suggestion that it could refer usefully to contemporary software products. If any of your readers have details of such products I would be glad to hear from them. Both background and detailed informa-

tion on portability would be use-

'Portable' information I shall acknowledge any material useful in my work, but brief maketing documents are unlikely in

Dr PETER J. L. WALLIS Lecturer in Computing University of Bath,

"I sak you to review your policy and to give a reasonable chance to products of British design and Family tree print-out manufacture." Twich to print out out family (0787) 210 102 or by left and the carry out out out out family (0787) 210 102 or by left and the carry out out out out o

TWISH to print our our family (0787) 210 102 or by letter to the tree on to wide and long paper and as is done on a line plotter. Do any would be able to help BLATCH. GW readers possess, or have authorised access to, facilities and are able to help? The aim is to format the top of the tree (circa 1750) so that it is clear and readable throughout, bearing in mind that the current version is about off long by 31/2ft wide and needs another 11/2ft on the top! Our forefathers had numerous

children and a manuscript copy takes a lot of writing, but once printed, could be easily reproduced on an architecta plan copier. (As a private individual I would be able to afford pence and the ponted) I may be contacted by phone on

Edwardstone, Colchester, Essex. THE EDITOR welcomes let

THE EDITOR welcomes, to raco on menting on subjects published in Computer Weekly, or on original topics. All jetters must be a coom panied by the writers, name and address, not necessarily for publics. tion

for van salesmen

Burope by UCSL Microsystems, is designed to take the paper work out of van selling and free the

programmed to receive stock and

When it is connected to a printer powered by the van's own battery, information input to the terminal stoduces receipts and involces. A portable attache case version of the printer is also available, and the whole system costs about £2,000.

UCSI Microsystems described bow a typical salesman might use of UCSL Microsystems, companies pinpointed immediately.

Dick Moore, UK sales manager bow a typical salesman might use of UCSL Microsystems, commented; "There are over 10,000 the depot he would check the physical salesmen in the UK alone and

the depot he would check the physical stock against the number held all are facing similar problems on the terminal. During his rounds they have been neglected in terms the salesman inputs each retailer's of computerisation.

EVEN the van selling bread and fresh veg door-to-door is now being computerised. Route Commander, marketed in the UK and the remined and discounts are ratings and discounts are preloaded into the terminal, and all calculations are produced automatically. Stock levels are adjusted

at the same time.
For fresh foods with expiry dates the salesman can assess instantly what is left at the end of the and hold details of discounts. Both the terminal and 800ds returned, according to the sleeds of the individual salesman, when it is connected to a printer order if required.

Belgium buys Prestel

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GILB'S MYTHODOLOGY

Seek simpler solutions by defining real needs

ours, wanted a new system designed with a stipulation from the financial director that Cobol be used. We felt that this requirement conflicted with our ability to satisfy the even more important per transaction

One approach envisaged a major architectural strategy of using minicomputers, and Cobol was not a major or efficient language on mins at that time.

Our clients reasoned that, if the "mini" architecture did not work out satisfactorily, they could move the new system back to the largescale computers they were accus-tomed to using on a service bureau

safety line, or a retreat possibility. They did not really care about Cobol; they wanted peace of mind.

system. This was the primary ele-ment needed for profitability and

ing Cobol would double costs compared to Basic or Fortran. This is not a general assertion about the languages but seemed to be the case with minis at this time. We requested and received

ngreement to reformulation of the client's needs, and agreed to design and build the system so that it 98% portable, whatever the machines we ultimately used, to large-scale IBM machines. In other words, a maximum 2% addi-tional cost would be necessary for converting the programs to larger-scale machines. Briefly, even if real costs were not so optimistic,

practical barrier to conversion. **TEN YEARS AGO**

From Computer Weekly of December 3, 1970

of Education and Science, Marga-ret Thatcher, has decided to axe

SECRETARY for the Department 1904A to handle plant contro

this. We judged the probability of needing conversion to be very low, but avoided having Cobol costs imcompetitiveness. We calculated roughly, that usposed on us. The penalty was that we had to specify a restricted, "portable" use of the programming language we chose finally.

Insurance

A large Nordic life insurance company was dissatisfied with the ease of maintenance and onerational cost level of its entire life insurance system. Its basic plan called for a complete redevelopment of life insurance computerised systems, a project clearly involving many hundreds of work

The director of data processing was concerned about the size of the planned project. We made a concerted formal effort to identify the highest priority needs, and several points emerged.

They were to reduce cost level by at least 4%, improve substan-tially the ability to implement changes and improvements in the system, and cut the time factor between data birth (with salesmen and clients) and when the compu-terised system knew about this new data. Instead of a fortnight, the clients would have liked to see the operation done in three days or

One obvious way to approach these goals was to redesign and reprogram the entire life insurance

specialists to do this, but the clients were considering this reluctantly as the only viable way.

Once we started concentrating on looking for evolutionary steps to achieve these goals, a number o short-term strategies emerged which would begin to move the insurance company in the right direction, without the burden of tremendous and uncertain revolutionary developments

An initial specific strategy was the use of INSPECTION (Fagan/ IBM quality control of all changes and extensions) which was given substantial productivity (cost) and quality improvements in large

We identified the use of deep mation as another possibility.

Message

The initial attractiveness of both these solutions was that they gave known results in the right direction without the necessity of changing currently used applica-

tive change paths in a more exten-sive study such as using online

FOCUS

Downtime by Chad

Music hath chips?

TOM CARPENTER of Guern-sey wrote to the Daily Another Newspaper suggesting that "In this age of microchips it is possible to banish the chap waving his arms about in front of the

rchestra. Continued Carpenter: "A that is required is a set of small coloured lights on each music stand. These would be gove erned by a cassette prorammed by the arm-waver in he comfort of his study. Each instrumentalist would soon learn to co-ordinate the indi-vidual flickering, waxing and waning lights with the score," What Carpenter's proposal is

ntended to achieve I am not uite sure. In these days of cuts in the arts budget it would b



out in this case that does n happen because he has to do the ducting at home anyway. Repeat performances are

saved, I suppose, and his travelling expenses, but surely there is much more scope for Ellenby says that cost-justifying avolved if a large company wants economy on the shop floor, so He considers that it is impracti-able to get all the different divi-

There was a well-known study of a symphony orchestra by an efficiency expert, who recommended that since the English horn player and the harpist had little to do, their parts should be combined. He also suggested that the skw movements should be speede

up, thereby getting the work done in much less time. Carpenter's idea is unusual i that it gets rid of management rather than workers, something not very popular with managers. It raises the prospect of a shop floor revolution.

What would happen if the

players all decided to ignore the flashing lights and put their ruflashing lights and put the batos and pizzicatos in unauthorised places? Since Sir Thomas Beecham is already spinning in his grave like a propellor shaft, I suppose the rumbling noise in the Royal Albert Hall would just get a bit

worse.

It seems to me that the real potential for microchips would be in rendering the process of music making not quite so enormously difficult as it is now. I have spent many for struggling to learn to pay piano, and the process of translating the dots on the paper into positions of the paper into positions of the paper in real time seems tiditiously complicated (mainly because I've never been able to do

it).

It seems to me it should be possible to devise a mechanism that would handle the digital side of playing a pland, say, while leaving the analogue side the artistic interpretation, the artistic interpretation, the artistic interpretation. (the artistic interpretation, don't you know) to the human. The machine would read the notes and set itself up ready to play each chord, and then play it when you pressed a single button, thus saving you having to multiprocess several fineers at once. How hard you present the button determines the load.

My musical friends are hori-fied at the idea. But why should the arts fall behind in the March of Progress?

NFOTECH STATE OF THE ART REVIEW

"unique characteristics".
Ellenby was at Xerox Palo Alto

Research Centre until last January

supervising development of the Alto personal computer; he has

enlisted no less a figure than Gene Amdahl to his board of directors.

Grid Systems has \$2½ million backing from New York bank Citi-

Due to be unveiled in nine months' time, the office system is intended specifically for managerial use but expatriate Englishman Ellenby is cagey about

what it will comprise.

He has been influenced consid-

trably both in a positive and negative sense by his years at PARC. Big companies like Xerox and IBM are ill-equipped to take advantage of VLSI because of business and the sense of the sen

sess decision-making difficulties,

of the apparent market because of

are minicomputer suppliers,

son when Ellenby's version

appears on the market.

Computer Sciences.

Integrated Doubts on ICL office chances with a of survival difference

WAITING for a big firm to information technology industry of the future than the two other produce a true integrated office automation system is like waiting for Godot - it will never happen. European-based mainframe manuacturers, Siemens and CII-That was the opinion voiced at infotech's State of the Art Review

Honeywell Bull.
This was one of the predictions made by consultant Phil Dorn in a by John Ellenby, president of Grid Systems of Silicon Valley, and it is paper on the future structure of hardly surprising.
Ellenby has just started his comindustry presented at last week's Infotech State of the Art pany to produce an integrated office which he claims will have Review in London. Dorn outlined a profile of the

nodel company with all the characteristics for survival, putting a tions and office technology capa-

According to Dorn, its activities should include supplying both voice and data communications kit and the operation of unregulated etwork services. The company still has only eight staff but they include established brains from Xerox, Apple and

There should also be a research division specialising in advanced communications methods. Image technology expertise and the

supply of shared logic word processors are key factors in the fice systems area.

Dorn also saw State support for R&D and a protected home market as important prerequisites for survival, thereby eliminating the UK as the base for a computer company assured of survival.

While Siemens and CII-HB were ranked by Dorn as "sure bets" to survive, ICL was given only a "fair" chance. Apart from IBM the "sure bet"

group also includes the Japanese leaders, Pujitsu, Hitachi and NEC, and three organisations strongest at the moment in the communications and office fields - Xerox, Northern Telecom and

the US telecom giant, AT&T. Size is seen by Dorn as another critical factor, which is why he saw relatively small companies like Wang, Datapoint, Prime and Nixdorf as having problems, despite

IBM goes into **Expert Systems**

Systems, with a joint research pro-ject with Artificial Intelligence re-searchers at Stanford University included plenty of misleading vho are working on a system to symptoms

Announcing this at Infotech's commitments and risks Stanford, suggested that one of the piggest potential application areas for Expert Systems was in making up for acute shortages in electron-

sions to agree on features and cur-Expert Systems are those which tently elaborate market research provide advice on incompletely understood areas of knowledge, procedures tend to reduce the size based on rules fed in by human

Ellenby points out that informal use of office equipment is far more important than formal application, taking the example of the Some spectacular successes have been made by Expert Systems re-cently, he said, specifically in solv-ing problems of diagnosis in in-ternal medicine and molecular Xerox copier.
All the companies offering "integrated office systems" at present

genetics The Internist medical diagnostic program had been successful in solving a large set of theoretical problems including one in renal

A genetics engineering firm in San Francisco, Genentec, was using his Molgen program intensi-vely in research to produce the anti-cancer drug Interferon, Feigenbaum said, adding that he has set up his own firm to market the software commercially.

The project with IBM involves a

4331 connected locally to a System I mini and remotely to a 370/158. It is system failures rather than chip failures that are being traced, usually to faults in communications links or operating system

Looking to the future, Peigen-baum saw Expert Systems being used to solve the problems of VLSI design, where the combina-torial problems were far too great either for human beings or conven-tional computing. He is already exploring this area in conjunction

with Xerox PARC and Fairchild.
The biggest single market,
however, is in the home, Peigenbaum feels, seeing Expert Systems used in games and also in giving advice on problems such as care of plants and how to invest.

One area of expertise in which Feigenbaum has been totally unsuccessful in recruiting human experts to co-operate is that of economics and management. His col-leagues in these fields at Stanford are quite candid in telling him, he says, that no-one really understands the problems. These areas

Hardware aspects

are still "Black Magic"

GORDON Bell, vice-president of Engineering Development at DEC, concentrated naturally on DEC, concentrated naturally on "state of the art" hardware aspects in his introduction. "A lifth-generation computer can be fabricated on a Very Large Scale Integrated contribute."

circuit."

Bell predicted that lower cost and increased use would disperse. computers in a manner analogous to the ubiquitous fractions

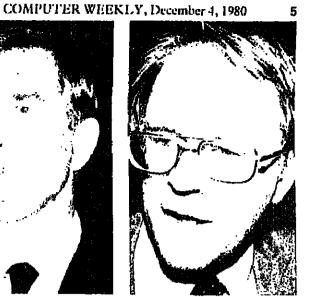
horsepower, motor.

He saw distributed processings connecting up all these dispersed computers, as the key to the industry's development over the next decade:

More news from the info-tech Review is on page 6, See: "Flerce attack on sales athics",

The second secon





Merchant banker predicts files — but no clerks

HILL Samuel merchant bank director Hamish Donaldson defined his systems objective as dispensing with clerical staff in the

By following the rules developed at Hill Samuel, a series of guidelines had been established in rela-

Files should be held close to the sections responsible for accuracy, requiring fastest response, point of most frequently.

Working under those guidelines

and predicting a sharp full in processor costs, Donaldson observed that future development should help "to consider realistically a processor per application

He foresaw resistance from "many management services departments who are clinging to the technical fascination of large

Looking to the next ten years, The irrelevance of the results and, in many cases, the sheer destruc-

tiveness of the programmes un-dertaken in pursuit of MIS have ming language based on natural English led to its general abandonment as a Users will be discouraged from goal for the industry."

developing their own application software, particularly in relation to He blamed a variety of causes for the failure, including data munfile maintenance and accounting. agement - some main files be-There was strong audience re-action to implied criticism of the came one master file, transaction accumulated a multiplicity of sort database approach inherent in Do-naldson's paper - questions from keys, run times for productive work doubled or more, and a the floor showed a particularly sharp reaction from software and number of companies went bank rupt during this phase. hardware representatives noti-

Programmers were seen as the enemies of progress by MIS practiceably removed from the user front end, which was Donaldson's tioners - in some ways correctly hobby horse in the paper.

Hoskyns Group managing director Jim Feeney concentrated in his since programming was and remains the bottleneck.

Feeney demonstrated the contradiction between the conpaper on the apparent failure of stantly-rising performance claims from hardware manufacturers durhe Management Information System approach which seemed so ing this period and corresponding failure of the systems to deliver end-user benefits on the scale expromising ten years ago.

Feeney described MIS as "a now largely discredited term for a laudable aim which has been

saw the way forward to lie via

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Compec Europe, more details. TPC Exhibitions Ltd. 40 Bowling Oreen Lane, London EC1R ONE, ENGLAND, Address: Please provisionally reserve

the Documentation Processing IBM (UK) has been appointed Centre at Manchester which was chairman of the new CB set up three years ago by the standing committee on mar-Office for Scientific and Technical Information. The decision was Tottenham Hotspur football taken "to achieve reduction in clubs are to sell tickets for home Civil Service manpower" . . . As league games through Compu-part of an £85 million expansion ticket, which has opened an exat Bagian Bay, South Wales, BP perimental service in Tottenhar Chemicals has ordered an ICL Court Road, London. system. It might take three to ten AT THE CENTRE OF EUROPE'S BIGGEST & CONCENTRATED COMPUTER MARKET

BRUSSELS, May 5-7, 1981

minicomputers, peripherals, terminals and microprocessors attracted nearly 6,500 trade buyers to the 1980 event. Visitors came from 15 countries worldwide with the majority consisting of directors, managers, data processing managers, systems managers, systems analysts. programmers, technicians, buyers, engineers and consultants.

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We identified additional attrac-

Excellence may

prove difficult planning to set up European. Centres of Excellence may stimu-Centres of Excellence may stimu-late similar UK projects. But selecting DP Centres of Excellence

Swansea and most State industry DP operations would be eliminated before the project got under way. Other candidates for early lemise would include high street organisations. Similarly, computer units controlling London traffic, Waterloo Station indicator boards and Heathrow Airport would

There is a definite need for some DP Centres of Excellence. The overnment would welcome the ides and promote such centres as UK DP technological showplaces. Academic institutions would appreciate the scheme, and would lose little time in arranging on-site seminary workshops and substitutions. seminars, workshops and sabbati-

Benefits

Manufacturers would seize on the creation of excellence centres if only to make use of them as potential customer reference installa-tions. Whether the DP manage-ment teams involved would show the same levels of enthusiasm in

face of mass invasion and "noto-riety" is far from certain.

This might be countered if the award carried substantial benefits, such as unlimited speaking en-gagements at all On-Line Conferences in venues like Hawaii, Brazil

ences in venues like Hawaii, Brazii
or Mexico, or granted honorary
membership of the BCS, BIM,
NCC, and the IBM user group.

Before seals of excellence are
swarded, some guidelines must be
established. Even the REC finds
difficulty in developing an acceptable system of monitoring success
in terms of research and study
outlay. The Commission has established a "think tank" known as
FAST (Forecasting and Assessment in the field of Science and
Technology) led by six Commupromising future.

available resources.

The end user should have a
strong say in the selection process,
as should the privacy group of the
National Council of Civil Liberties.

These awards may stimulate the
computer industry, especially if
Centres of Excellence are indicated
in the Computer Users' Year Book
with a star or rosette. As computing is much involved in tabulation
and classification, the DP Centres
of Excellence scheme may have a
promising future.

Tom Gilb is an indepen-

dent consultant, lecturer

and author on computing

microcomputers at salesman level

to capture data at customer homes

and in sales offices. These would

replace present handwritten forms which caused much of the pre-

sently-experienced delay and cost. Again the attraction of this was

that we could add it to the present

system without having to change

In this short example I cannot

identify all the "real" goals that we identified, or all the simplified so-

lutions compared to doing the

The message here is that in the

eyes of this company we found a large number of "simpler" solu-tions by identifying their "real" needs clearly. The next stage was

to look for a series of ways to move

in the direction of achieving those

tion seems to be too complicated, look for simpler approaches by first asking: What are our real needs. This will allow you to find a

simpler set of solutions to your problem.

Gilb's Hypothesis: If your solu-

the automated system.

whole system over.

DP think tanks, as most managers have six team members whom they would prefer to have cluttering up an ideas forum rather than the

installation of think tanks should prove no problem. Given the academic bias, obvious locations are the Hatfield Poly campus, Inmos in Bristol, or Nexos in Centre

Selection

First item on the forum's agenda will be to establish selection criteria, Selecting Centres of Excel-lence will need more than a letter of recommendation from equipment suppliers or the company managing director. Nominations will have to come from independent sources, with a heavy leaning on fellow DPMs, consultants and possibly computer journal edi-

Methodology established, the next stage must involve deciding specifications. Should the Centres Excellence include small-scale inicomputer installations operating with minimal resources, a critical real time distribution warehousing system, or large multi-mixed configurations operating on three-shift seven-day week rou-tines? Perhaps cost/performance. criteria should be the determinant, or output measured in terms of

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by Claire Gooding

Tritter Later Control

Fierce attack on sales ethics

of management in big computer companies and on the techniques of computer salesmen was made last week by Brian O'Heron, former systems and technical support chief at ICL.

Speaking at the Infotech State of the Art Review in London O'Heron deliberately avoided the subject he was billed to discuss, the problems of achieving user oriented systems. Instead he chose to highlight what he considered to be the real reasons that users so often end up with systems that fail to meet their original require-

O'Heron asserted that the main concern of computer salesmen was to hide the truth about their product rather than inform the customer. He singled out high commission related quotes resulting from the rapid growth of the computer industry as the force driving them to make a quick sale regard

less of user satisfaction.

According to O'Heron, the only way this rapid growth could be Terminals of San Diego.

OCR equipment for **Paris Gendarmerie**

documents a day such as arrest reports and duty logs typed by in-dividual gendariues on patrol, as well as pencil and paper tests com-pleted by job applicants. The £155,000 basic 2250 scan-

ning system reads OCR-A and OCR-B type founts and the simple peucil marks used on the test papers. Enhancements allow other type founts and handprint, either numeric or alphanumeric, to be used and the system can also be configured for key-to-disc or keyto-tape data entry.
Documents with unidentified

characters are stocked separately and the bad characters can be corrected from a £9,250 Scamplex I VDU, which displays the character as it appears to the scanner. If it

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refuse when subjected to sales pressures, even if a negative response proved more difficult than

Turning his attention to managerial attitudes, O'Heron said that directors of large firms were too occupied with company politics to worry about customers or the

O'Heron told how he had been prevented, during his executive days in a large company, from mo-tivating fully the people for whom he had responsibility.

Illustrating his argument about company politics, O'Heron described how a group of ICL managers tried to "kill" a project to manufacture a particular design o printer because they had favoured another design that had been rejected earlier.

O'Heron directed the ICL 2900 development programme from 1970 onwards but returned to his

tified, the original can be consul-

The Gendarmerie finds that

about one-fifth of the documents

read in are rejected, but usually

with only one bad character, which

means that between five and ten

characters per 1,000 have to be rekeyed. This is thought to be

acceptable for non-professional

typists and is expected to be a

more economical method of input

than current alternatives, such as a

key-to-disc unit for each of the 4,000 brigade offices or a network

OPTICAL character recognition is not clear enough to be iden-equipment has been installed at tified, the original can be consul-Paris headquarters of the French Gendarmerie, a branch of the military which covers a range of activities from the territorial army and military police to the consiguard and rural police forces. Consisting of two OCR Scandata

2250/1 scanning systems based on 28K word Digital Equipment PDP-8E processors, with two Pertec magnetic tape units and four Scanplex I VDUs, the equipment replaces two Scandata 250 systems installed in 1973. It is used to process an average of 15,000

EEC study of viewdata in farming

tabase could best serve the European agricultural community is to be carried out by Aregon International with IPC Agricultural Press and Misset, the specialist publishing subsidiary of Holland's biggest publisher, Elsevier, Funded by the EBC under a £30,000 contract as part of its plants stimulate the creation of public

to stimulate the creation of public databases in Europe, the study is intended to confirm the requirement for information, determine the costs of a Community-wide network and produce an initial design for a system, attempting to resolve the problems of the dif-ferent national coding standards used in viewdata and the different languages spoken.

'UK first' claim

120 cps from ·

will run the lourpars real-time re-servation system from System Aid, the Southall-based software house. Installation is to begin next March and the existing ICL 2904 will be removed when the new system is operational. PROTOCOL converters aimed at PSS users have been launched in the UK by Nolton Communications of Cheshunt, Herrs, which claims to be the only UK supplier whose converters have passed British Telecom's X25 test procedures for both PSS and Buronet.

BRIAN O'HE. RON (right) fierce attack on both mantudes and sales techniques at infotech, singling out



"Users are beginning to see the benefits of using available and standardised packages

"Today more than half a mil-

tion systems could help produce

applications software more

improvements to that and the soft-

ware to increase speed. An "edit

station," without a printer, can be bought for £3,515 for preparation

the communications link to

tion people are classified as pro-

Cheaper by package

cheaper than home-grown systems and help to break the programmer bottleneck, informatics vice-président James R. Porter told the National Shere-holders Management Sympo-

He quoted a program costing five times more to develop in-

house than to purchase as a stan-dard package. "It would take 15

dard package. "It would take it months to develop and implement, as opposed to six months for the package."

Speaking of revenues from each product, he forecast that by 1985 packages would be earning \$8 billion a year, almost twice as much as custom products at that time.

DIGITAL EQUIPMENT has

substantially reduced the price of its stand-alone word processor and

improved the software in an effort

price, and for another £495 a pack-

system providing Basic and For-

tran programming.

The Word Station is a de-

Cosmos holidays

three MB29 Model 45s with 840

megabytes of disc storage, which

will run the Tourpars real-time re-

ME29s for

DEC cuts its word

processor price

Open University puts 'remote blackboard' under student test

THE Open University will a conference telephone call. Each evaluate student response to the "remote blackboard" facility of its Cyclops teaching terminal system inder a two-year study contract

The blackboard allows users to write or draw on the Cyclops screen or on an attached graphics tablet in a similar way to the Telewriting device developed by French research centre CCETI for the French government's

Evaluation is being helped by Aregon International, which as-sisted in developing the Cyclops terminal and is marketing the product internationally.

For trial purposes, a rutor will

participant will be able to address another and draw on all the screens. Pre-recorded cassettes can also be used.

Cyclops is designed to display colour graphics to a resolution of 320 by 240 picture points, atthough monochrome will be used in the trial. It is also compatible with Prestel

and Aregon's IVS-3 viewdate systems for displaying alphanu-meric characters and mosaic graphics.
With two additional character

sets and a geometric graphic cod-ing scheme like the Canadian Telidon system, Cyclops also has a run-length encoded graphics mode for reproducing photographic

AT&T joins list of survey 'pioneers'

where the development costs are apread over a larger base and personnel costs can be held more AMERICAN telecommunications giant AT&T is among the first subscribers to a UK residential market study for teletext and viewdata being conducted by London-based consultancy Communications Studies and Planning.

grammers.
"As demand for these people is "As demand for these people is growing at 20 per cent a year, until the shortage eases, the range of standard packages available should be seriously considered."

Companies with non-standard needs would find implementa-Eastern Counties Newspapers is another initial study subscriber and is collaborating with CS&P by providing information on use of its Prestel database.

Individual subscription fees are £5,000, or £18,000 on a group basis, allowing reproduction within an association. Four or five more subscribers are needed to make the

project break even.

Based on users' diaries and interviews conducted with them, the first report in the three-stage study deals with teletext reactions. It is iue for completion before the end

For viewdata reactions, CS&P is waiting until 400 genuine residen-tial users are registered on Prestel. Most of those now registered as residential are new viewdata industry members with additional home

traffic is to be handled by Kokusai Denshin Denwa, Japan's external

telecommunications agency, and Comsat in the US under seven-

Six satellites on order

European word processing mar-ket," in the words of European WP manager Ray Redpath. The Word Station now costs £4,985 for a single screen, twin floppy discs, and daisy wheel prin-Software for list processing and communications is included in the SIX satellites worth \$180 million are to be ordered by Inmarsat, the international marktime satellite orage called COS-310 turns the ganisation, from the European Space Agency, Intelsat and Commachine into a small business sat General to cover maritime comnunications in the Atlantic, Pacific and Indian oceans. They are to be delivered between 1982 and

velopment of the existing WS78 stand-alone machine, using basi-cally the same hardware but with The PTTs of 30 countries are signatories to the one-year-old Inmarsat operating agreement, with the US holding 23.4% of the shares, Russia 14.3% and the UK 9.92%. Plans were laid for the ser-TOUR operator Cosmos Air Holi-days of Bromley, Kent, has placed a £600,000 order with ICL for vice by the United Nations in

year contracts totalling \$8.5 mil-Traffic to be carried includes telex, facsimile and a variety of

data speeds, as well as telephon and priority distress signals. Shipboard terminals in use with Comsat's current Marisat satellite network now total 500, but this is expected to grow to 2,000 by 1985 and 5,000 by 1990, or more if costs fall much from the current levels

of \$40,000 to \$70,000.

South Africa expands

tions, the electronics industry in South Africa is expanding and will be able to manufacture medium

aystem is operational:

Over 600 ME29s have been This is the opinion of Able Van ordered since the system was der Berg, chairman of South launched in March, half of them Africa's Industrial Development

"The local electronics industry spurred along initially by the Post Office and this organisation, is further along the road to self-sufficlency than most people realise," said Van der Berg.

An illustration of the country's levelopment is the terminal manu-

Market researchers are confident of achieving their 400 target in time for the study to be completed in March with the third and final report an analysis of findings.

AES and **Wordplex** split up

THE marriage between two of the world's principal suppliers of word processors, both Canadian owned, over, AES and Wordplex are being split apart by their parent company, the Canada De-velopment Corp, only two years after they were bought up entirely and merged (CW, August 3,

AES will continue to operate from Canada but control of Wordplex will be transferred to London where Harry Mallinson, managing director of Wordplex in the UK before the merger, is to

become international president.
Wordplex sales offices are to be opened in the US in an effort to improve the company's hitherto poor penetration there. The former distributors, Lanier, have concentrated on selling AES

Jerry Bliley, vice-president of the Canada Development Corp, said that the split was intended to increase the market penetration of both companies. It was originally thought that the two
product lines were compatible, but
difficulties in trying to sell both
with the same sales force led to the marketing forces being split, and total separation has been predicted for some time (CW, July 10)

Growing market

THE UK small business system market will Increase sever times over in terms of numbers of units in the next five year, according to a survey from Market Report, an ECC publication. The total value of systems under £25,000 sold angually will increase from £100 million in 1979 to about £800 million in 1985.

factured by Mercedes Datakor. DIGITAL . ANDERSON JACOBSON . TRANSDATA . A M JACQUARD . MELLORDATA . NEWBURY LABORATORIES . TEXAS

Monitors and 30 cps from £46 per month \$87 per month £63 per month Daisy Wheel from 2104 per month

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compatible) from 233 per month APL from \$47 per month VT52 and other options from £47 per month ALSO AVAILABLE.

Integral terminals from 287 per month. Separate P/T Cassette units from £43 per month
Separate Diskette units from £60 per month Contact Mike Brooke or Philip Ely. Tel: Byfleet 53151 & 49618

SHORT TERM RENTALS MIDS Rentals

Specialists in the renting of terminals

SOFTWARE FILE

Crash course in pitfalls from ICL

IF you haven't time to study eco-nomics or accounting, a morning spent at Balance the Alternatives, ICL Dataskil's financial planning service, might prove a valuable

Dataskil appears at "Alternatives" in the guise of business con-sultant as well as in the more familiar role of ICL software house. Its successful financial modelling package Prosper is the tool in a wide-ranging examination of the financial roundabouts and swings which can make or break a com-

Financial and modelling packages have provided boom sales for the software industry in the past year, partly as a consequence of the recession which has forced companies to examine their use of inancial resources more critically than ever before.

The pitfall in using such a tool is the one inherent in the use of all right questions to ask in order to

Balance the Alternatives is a crash course in pitfalls - how to wolding action into effect.

Smith demonstrates the importance of keeping a balance between the various elements of cash flow: money used and cash required, liquidity and productivity, sales,

BL debt system

HEAVY Vehicles and Parts, the most profitable British Leyland sections, have installed an ac-counts-receivable package from Management Science America In account America in an attempt to save money by stricter control of debtors

BL chose MSA after a comat chose MSA after a com-parative study because it pro-vides an open-frem ledger, on-line cash allocation and inquiry facilities, enabling telephone queries to be answered im-mediately. It runs on IBM hardware using VSAM- files and IBM software besides the CKS TP monitor.



prices, volume of business, costs

and profits, pay increases and emplovec relations His theories are then put to the

get a realistic and helpful response test using Prosper, which gener-from the system. key factors, and shows in stark deidentify them and how to put swings can lead to such losses on the roundabouts that the whole Independent consultant Gooff playground goes out of business.

Repercussions

Prosper allows a detailed study f the effects which stem from such actions as putting up prices or cutting the workforce, with all the repercussions on income, profit, and productivity, clearly shown through comparitive columns of

Concentrating on "added value" and the profit per £ of capital, Smith uses the concept of balance between the ratios to extrapolate some eye-opening figures from the published accounts of (unnamed) major companies.

A manager trying to put his own discover the reason for a competitor's success, could do so on a terminal in the privacy of his office, without privileged information. The system is easy to master, and a business plan can be produced in half an hour using only the pub-lished reports, once the various ratios of profit and loss are un-

Helping builders to give accurate estimates

throughout Europe are being which the user assigns functions. system that aims to give users an accurate quotation of job costs without involving them in prooften the builder's most laborious job, estimating, and is said by managing director David Summerfield to cut the time spent on this activity by 2502.

at the time spent on this scriptly by 75%.

The British company was set up a Solibull nine months ago to take the US system and put it on the Buropesh market. Essentially, it prices labour and materials.

The system strukture on 1 52000

The system runs on an LS2000 which was specially builts for the spication, is based on two Z80 curps and runs under CP/M. here are three standard systems at present, for electrical, inchanical and ducting work. Description of the manager Chris Wall said the system was designed to promot the week all the time. prompt the user all the time. There are about 30 programs for

then in C Basic-2.

CONSTRUCTION firms later, and the other has 40 keys to

Batimation Ltd, which is owned by a large Midlands construction firm, has European licensing rights. There are currently 11 UK Braining and file maintenance.

It was developed in the US by
Rsimation Inc. to speed what is

The rights. There are carrying has an users and the company has an order from Denmark. In the US, the system has 1,000 users. The system is selling at £8,150

for the hardware (including a Texas Instruments 820 KSR printer) plus £1,300 for the mechanical te, £900 for the electrical suite and £900 for the ducting stite. **Zeus City order**

SOFTWARE house Zeus Hermes

has won the biggest contract in its 11-year history. The contract is for enhancements to the Foreign Exchange in-branch system for National Westminster's London-based World Money Centre, and is worth over £500,000. The system will provide dealers with up-to-date exchange rate information and will facilitate calculations affected by their constant fluct-uations. Scheduled to go live in 1982 on dual General Automation 1982 on dual General Auto Retination is menu-driven. It 16470s, the system will draw on board one part is a numeric pad ience in real time banking applications.

source of income, with the possible spin-off for ICL in selling ardware to support the service. It s available, with the advice of Geoff Smith, on a bureau basis or on the range of ICL kit between the smallest ME29 to the largest At a monthly rental of £160, or annual fee of £800 after the first year cost of £4,000, Balance the

Dataskil has high hopes of the service and sees it as an important

Alternatives may sound pricey. But Tim Craig, manager of Finan-cial Planning at Dataskil, points out that it is an ideal tool for the manager untrained in financial disciplines, and could pay for itself

Those interested in the service already include such names as Plessey and the Henley Centre for Forecasting, and Dataskil has constructed its own future business plan using the tool.

The same of the sa MICRO software specialist Southdata is launching a vision system aimed at solving security problems. Vision-80 is a package consisting of one or two hardware boards and a set of programs carrying out processing on a standard industrial TV camera pic-

ment, speed and direction.

The system could operate a traffic census by registering the number of vohicles larger than a given size The system looks for movement in the picture, classifying the moving object by size, speed and direction. If it falls into a pre-defined "sensitive" category, the movement is reported and appropriate action taken. This might involve setting off an alarm if the system is used as a security watchguard or incrementing a counter if it is being used to monitor queues.

As false alarms are the great pleased in sutomatic. and moving at a particular speed on any piece of road, in the picture, Vision-80 would ignore the area outside striped lines, and anything such as clouds or birds moving within them, but the man carrying the gun would set off an alarm since, reduced to a two

dimensional pattern, he would enter the pre-set "illegal object" category. As false alarms are the great plague of automatic "illegal object" category.
security systems, the software deals with an exact
definition of "illegal" movements. Exceptions are en-

cisplay for compliters.

IBM have just produced a new VDU that will connect to most computers. Because it's ASCII Teletype compatible.

The first thing you'll note about it is the startlingly crisp definition of its screen.

It should also please everyone using the VDU, because the screen tilts and swivels for comfortable viewing

There are dished keys for fast touchtyping; in fact the excellence of the whole keyboard design is a direct result of IBM's typewriter skills.

Not only is the terminal easy to use-but it's easy to set up. Less than 30 minutes from unpack-

ing to running. It has the quality

> you'd expect from IBM. But no VDU from IBM's Data Process ing Division has

ever been sold for as little as this. Buy it in quantity, and you may pay even less.

The IBM 3101 is now available through distributors.

Ask us for details. Ring our Direct Marketing Centre on 01-995 1422. Or send this coupon.

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on selectable line speeds. Modular design for ease of maintanance. Bureen unit swayds and tilts for user colulors. Sursea notificate filter.

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Please aend me more juloratation about the reIBM 3101 VDU, and where it may be obtained.

£1 million compensation report 'storm in a teacup'

REPORTS that ICL paid Oxford university over £1 million to compensate for its 2980 system "failure" have been described by the company as "rubbish" and as the company as "rubbish" and as the company as "rubbish" and as the compensation of the affair.

Computer Weekly reported in "a storm in a teacup" by Oxford University's Computing Service

The first report appeared in the Oxford Mail on November 25 and was picked up by The Times and Daily Telegraph a day later.

ICL has admitted that the Oxford contract was renegotiated in the summer of 1978, a year after the 2980 was installed.

Extra items

Oxford University said that ICL had supplied some extra hardware, including disc stores and memory and some "extra items" of softto far less than £1 million, according to the University.

The Department of Education

Computer Weekly reported in April 1978 how Kommfy software problems on the 2980's 7905/6 communications processor had been sorted out with patches.

This enabled government acceptance tests to be passed i time for the Computer Board to make main payment on the machine before the financial year ended and funding evaporated (CW, April 13, 1978).

This left 20% of the total payment outstanding, conditional upon the system's passing the fourth and final stage of benchmark tests stipulating doubled performance compared to stage three.

Both the University and ICL refused to provide details of the renegotiation. According to the University, the 2980 was signed off

'A Laker needed to break PO monopoly'

dence at the annual conference of the Telecommunications Managers' Association, held

Keynote speaker J. E. Sampson, director of telecommunications at Standard Telephones and Cables, called for a full-cale easing of the British

The proposed government solution, of leaving the policy decisions to the Minister of State, was more of a political pass than a practical solution,"

"It is in fact", he said, "a travesty of what liberalisation should be. The industry badly needs a Laker who in the guise of TeleLaker could cut through

the Post Office monopoly."
In reply John Harper, deputy
managing director (operations)
British Telecom, said the Post
Office recognised that liberalisation had to happen, but there were many differing solutions. The collective interests of the user, however, must at all times be the responsibility of the PTTs; it was the government and not the Post Office which

BUTLER . . . "Power to license

tinue to give selective financial

Butler suggested that industry needed to familiarise the next processing, and this should start at junior school level. He also paid tribute to some o

100,000 teletext sets in use

2. Over 1,500 micros in use in secondary schools;

planning program is described as a total package designed to maximise the transport department's resources.

ing fleet mix.
The system complies with EEC

Transport

costs cut

10% claim

A REAL time system for transport

distribution managers has been in-troduced in the UK by Freight

Computer Services, bureau of the National Freight Company, Called DiPS and developed

originally by Vaughan Reid, an independent consultant formerly with BOC Datasolve, the company

claims that its system cuts trans-

port costs by at least 10%.
DiPS runs on Freight Computer
Services' dual Honeywell Level 66

in Birmingham under its

nationwide time-sharing network.

FCS Time. It took the company

just three weeks to make the system "user friendly" with a minimum of work required.

For an initial £1,000-£2,000 outlay, including hardcopy terminal and contingent on the water than the system.

nal and contingent on the number

of lorries, the user has 24 hours a

day service from Monday to Satur-

day inclusive.

The package is based on

number of programs covering the whole distribution activity range, including account clustering, road

network analysis, warehouse and

depot location, plus strategic and daily operations involving delivery

route planning.
DiPS' strategic distribution

from January 1, 1981.

run on the customer's system. Us-

-Minister

the UK's achievements in telecoms, which he said put it shead of most of Europe. These

3. 6,000 Prestel sets in use; 4. ICL's CAFS, which he said

was a world leader;
5. Fibre optics.

It considers relevant factors like changes in drivers' hours, effects of proposed legislation, interaction of several depot areas and evaluatreduction of sub-contracting work

as part of a general policy.

"The company should examine the feasibility of the closure of the satellite factories to bring changes in driving regulations, un-der which there is an eight-hour limit on drivers' working days the personnel and work to Wins-

Daily route planning modules come into their own in bad weather conditions and in the event of vehicle failures, driver absence, road closures and other The package is also available to

Involve private sector

told the Telecommunications Managers' Association in Coventry last week that the resources of the private sector must be fully mobilised to create and use the opportunitles that new tech-

nology gave.

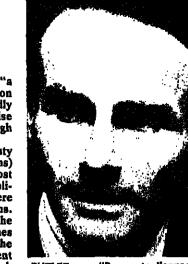
The Minister of State for Industry, Adam Butler, said the government's new Post Office Bill was designed to make the telecoms industry more efficient.

The Bill, if passed, would split the Post Office into separate postal and telecoms corporations and would make it easier for pri-



give the Secretary of State the power to license alternative network systems, and we are anxious that private manufacturers should be given every encouragement to make use of this new

support and we shall seek to establish favourable trading opportunities for our manufactur



Unions put plan to delay ICL redundancies

mah Castrol and Dorchester-based

DETAILS have emerged of proposals put to ICL management by union leaders representing 2,500 Winsford plant and other workers who are threatened with

At a meeting of the two sides last week the unions -ASTMS, APEX, AUEW/TASS, ESSA and ACTSS - called for the redundancies to be reconsidered or at

ICL responded with what one union official called "bewil-ICL responded with what one union official called "bewilderment" and announced that it was starting the 90-day consultation been given to the unions; scruti-

At the end of this period, and if

it is unable to redeploy the threatened workers, ICL will issue redundancy notices, followed by the normal 90-day notice period before affected employees leave.

The main points of the joint

• "That the manpower propo

ANADEX DP8000

DIGITAL LA34

DIGITAL LA120
120 cps keyboard terminel. Optimiset bir directions printing. Selectable crismators widdle. Elé interfece fine rates from 10 to 9,000 batch. Full forms handling facilities. Options include anisonatable let builter. APL character set and foreign sets.

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The most popular visual display in the world. 1920 character acresm capacity. Curier acresmon, Dual Intelligent, Audito port, Well range of spised and world formats. Options include Talebonk, 4010

les below har drom only £545

A lose cost Teatronic 4010 software-depipetible option gives the ADBA-SA powerful graphics capability. A 2-30A microprocessor and ARM sufficient for a 512 x 250 dot grid and superiodic scaling from 1024 x 750 enable point plorating. Sector drawing and aphanumuric character deplay.

GRAPHICS TERMINAL

Luan only **£1656**

• "This information will be examined in detail by the unions and discussed in detail at national level. The purpose of the discus-sions is to establish ICL's ability both to maintain the present workforce in the short-term and to develop methods of ensuring longterm job security.

 "A senior management team; with a union input, is to develop methods of maintaining present levels of employment by expansion into new product markets and by

in-house provision of equipment and services currently bought-in. Such methods should include the retention of the Winsford plant and workforce.

"ICL is to pursue actively alternatives which will both ease the current financial problems and secure long and short-term job

distributor with a comprehensive range of products at keen prices, backed by large stocks for fast delivery, with full after-sales support. We promise you a rapid response

"These include applying temporary short-term working compendeployment, retraining, other

LEAR SIEGLER ADM-31

LEAR SIEGLER ADM-42

TYPEWRITER TERMINAL

Two machines for the price of one. Type-writer style friction feed for single documents; letters etc. Plu feed for config-tions business stationary. Electric typewrites keytoerd leyout and pouch. Left and right hand margin setting. Often, high quality privatur.

Mant deth storage, high speed retrieval and intelligent data collection. Microphyceseor control. 200K character storage per distate. RS222 triesface. Switch selectable speeds. Easy file orientated mass data storage. The S51 adds a powerful displaced, high speed storage and selectable storage.

processed to difficultional printing. Adhesiate inactor fixeds, 3 1.15 inches, 9 x 2 doi matrix. RSZSE interface. Forms control options. Other sectal gray persial leteration control.

TECHTRAN 950

TEXAS 810.

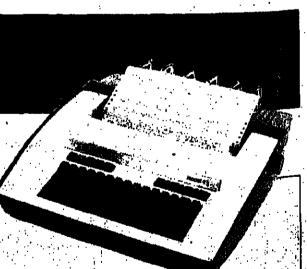
from univ £799

lion only **£995**

the backing of most trade unionists in the company.

An ICL spokesman said: "We will be meeting the unions on De- ers doing so already include Butcember 12 to give our answer to their proposals." ..when you need a dependable supplier, an authorised

According to the unions, such measures would do much to ease the problems faced by ICL and get



TELETYPE 43

Versatile, economic and reliable: 30 cps, serial Interface keyboard printer. 132 or 80 columns. 94 ASC11 set, 9 x 7 font. Crisp, high quality printout. Microprocessor controlled. Portable reions. Character set options. Call today for more details or a demonstration:

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T1740.

Portable 20 ops terminal including acquisit coupler weighing anti/ 13b. Thermal 5 x7 dot matrix, 80 column sith line, Incidented, 8 % wide paper. Options: BA/Auxiliary coupler, ktt. Anemarkett memory, Full ASC17 keyboard. Dual APU-Full ASC11 keyboard.

by Eileen Stainer

Good gate at first show but its 'quality' varied

new Hall 7 at the NEC, which coped

successfully with the visitors and

exhibitors in all ways (bar their eat-

ing habits). The number of visitors

was high - though their quality

could be described as patchy, with

a definite proportion of school-

has been chosen and the building

Sord management is currently

recruiting staff in Dublin to run

Business Machines of Penzance,

and Midas, have been shipping the

units, which come in the price range of £2,000 to £22,000, from

The Which Computer Show opened for the first time at the National Exhibition Centre in Birmingham last week, with a good initial first-day attendance of 4,300. Requested tickets before the show had totalled 24,000.

MICRO NEWS

Over 150 stands just filled the

FEW new launches were planned to coincide with the exhibition,

and one that was did not quite

make it in time. Nascom Interna-

tional, the new company recently

formed from the assets of the old

Nascom by Peter Matthews, had

hoped to release its first new pro-

ducts, but owing to "lack of time"

they did not appear, and can now be expected towards the end of the

Apple III systems in dealers'

able for £450 plus an additional

£100 for the Forms-2 screen for-

interest was thought by Edgar Blazier, managing director of Cinsal, to be the need for a UCSD Pascal Sord, is trying to penetrate deeper into the European small business system market by setting up an assembly plant in Dublin. The site only portable with Pascal and thus a Pascal compiler is needed.

However, the University Colis nearly completed ready to start operation in a couple of months. lege of San Diego (UCSD), does not supply its Pascal in one-off quantities. An initial outlay of a few thousand pounds is needed for the complete plant. Up to now the two UK distributors, Exleigh 5 copies and then each copy can be obtained for a few pounds.

Cinsal will be using CIS-Cobol

Ironically, there were still no hands, although one could be seen on the Microsense stand. At the -house for program conversions, marketing it on a large-scale basis. Tandy went to town on its stand with a full classroom-type do-it-

moment it seems that Apple in the US is putting more effort into going public than into producing Apple IIIs. vourself demonstration. Anyone One new launch that was not could sit at one of the 15 or so looking too popular at the show was CIS-Cobol, offered by Cinsal Model IIs and have a go at operat-Computers of Norwich for use with Texas Instruments' Models 1 looking at only, were the recently to 10 business systems
Cinsal completed the deal with manufactured for Tandy by Sharp

MicroFocus only a few weeks ago, and was using the show as a test market. The CIS-Cobol is availstand, though it was not as large as usual. It probably took the spill of visitors normally scattered round matter and programs generator.
One of the reasons for the low few Pet or Apple dealers at the

A few companies such as Rair and Sharp, which clearly fitted into the category of dealing in small business-oriented systems, were conspicuous by their absence. Their reasons could perhaps stem from the attitude of not wanting to exhibit at a first-time exhibition. Another Japanese company, the five assembly plants in Japan.

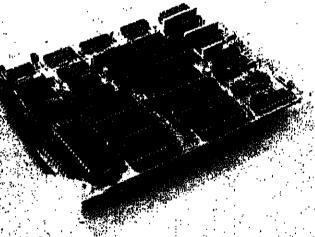
The company has recently launched a new range of 16-bit systems, the 243 series, based on the Intel 8086, but it was not ready to be launched at the show. In France Sord has been threatened with import restrictions unless it

Exleigh Business Machines, which was at the show, currently operates through six dealers throughout the UK. With the





From a computer terminal to a sophisticated mini, we can handle it - and fast. Our qualified engineers will operate within 8 working hours of receiving your call and they all carry a full set of spares.



board which can be strapped to accept any combination of 24-pin compatible RAMs, ROMs and EPROMs is available from VSI Electronics in Harlow.

Apple settles with ITT over disc copyright

THE dispute between Apple Com-puters of the US and ITT Con-sumer Products (UK) over an al-leged infringement of converght eged infringement of copyright concerning the Apple Disk II system has been settled. Neither party will disclose details of the terms of the settlement.

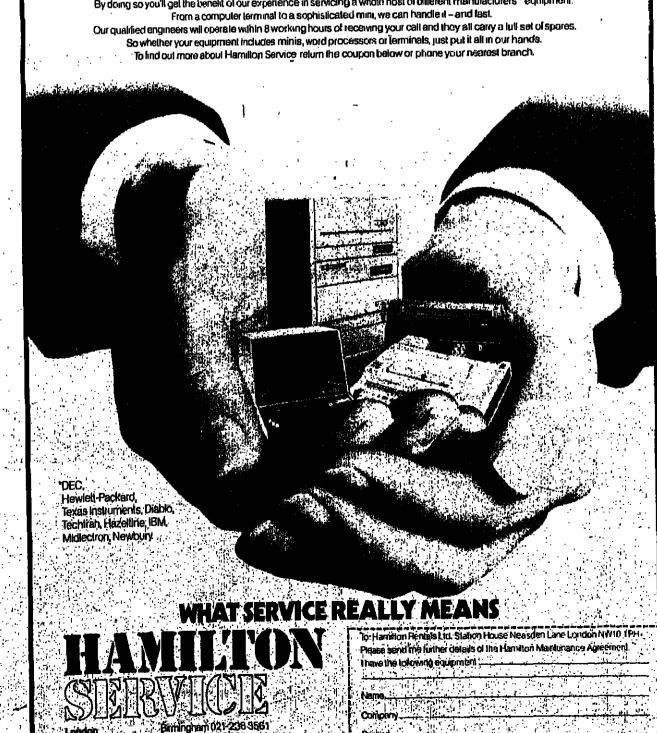
diagrams and circuit layout drawings related to the Apple Disk II system. As a result of the settlement, TIT has agreed not to manufacture or sell any article which infringes the copyright extent as provided in the original turing the CDP 1802 CMOS microprocessor, 512 bytes of TITE RAM, parallel I/O ports, an instant

has marketed a version of the terface expansion area, socket for Apple II called the 2020, especially 1K or 2K bytes of ROM and a years under contract with Apple. For quantities of more than 10, and produced to European specific CDP 185604, housed on a 4.5 by 7.5 inch card, is available for English started. Section in the 2135.

middle of the year (CW, July 10) when it was thought that ITT was manufacturing parts of the Apple U system itself. Apple has not extended its contract with ITT Con-sumer Products to include the pre-released business oriented Apple III, which is still not on the market The action taken in the UK after being announced several involved DOS 3.1 software, circuit months ago.

Based on the Z80 microproces-sor, the MDX-CPU 2 board from-Mostek can be user defined to accept combinations within any 1K boundary of a 84K memory

ITT Consumer Products UK RAM, parallel I/O ports, an in-



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IRELAND

Top score?-

by Pameia Rowe

SPOT

ICL takes the drudgery out of operations

mainframes last month. In apparent retaliation, ICL launched pair of 2900 mainframes backed by peripherals and operating software the following day.

For the record, both companies

claim that the simultaneous launch was coincidental, so it is inappropriate to make too much of main frame wars, battling bits and such like. Autumn must be springtime or mainframes.

independent consultant David Hebditch was unimpressed by IBM's offering when he spoke at the Inforch Operations Factory forum. "There have been no major advances in mainframe computer technology since the introduction of System 360."

ME 29

Hebditch suggested that an appropriate headline for the 3081 would be: "IBM makes 360 go

faster."
He agreed that I/O channels had been improved and that there was more soltware but nobody at the forum challenged the substance of

Ascending order

Similarly, ICL's products are not going to alter fundamentally the approach to DP. In fairness to the company, ICL makes no such claim, its sales pitch emphasising upgrade, evolutionary development and more value for expenditure.

The company claims that its

VME/B & E VME/K CME/2/3/G3 DME/64 2966 be enhanced threefold. VME/B&E VME/K DME/2/3/G3 VME/K CME/2 TME 2955 2956

VME/K DME/2/3

2950

2946

Carter-Parratt Group

at Sutton, Bath, Coventry, Leeds, Dunblane

RING 01-644 4355

ICL continues: "The planned TME introduction as a 2955 operating regime will enable users, with the help of IPA, to build networks of ME29s linked to the

It used to be said that magnetic tape was the natural storage medium for two-state data systems and ICL is half-inching ahead with

CME/G3

latest software range will not de-skill the operator but "take the drudgery out of their work and enable them to get the full benefit from their hardware". In ascending order of opera-tional significance, the ICL new

product roster includes two 2900 processors, the medium-sized 2955 and more powerful 2966, three half-inch Storage Technology transport mechanism tape drives, operating systems VME/B-E and VME/KSV 18, several IPA enhancements and Concurrent Machine Environment (CME) for DME and VME systems.

The average 2955 system comprises an Order Code Processor, Store Control Unit, 2 megabytes of storage, a Device Control Unit and peripherals costing £340,000.

A similar 2966 configuration with 4 megabytes of store and two Device Control Units costs £720,000. Developed from the 2956 Order Code Processor, the slave store has been increased 16 fold with performance claimed to

ICL says of the 2955: "CME will provide a straightforward growth path for DME/2 or 2904 users who can commence de-velopment work with VME/K."

Disc coupler

It's worth noting that networking is doing much already to rede-fine the operator's role. CME systems plus VME/B,

VME/K, DME/System 4 and George 3 are supported on the 2966. Incidentally, there is a new disc coupler permitting command chaining with DME/System 4

iCL's 2988 is pictured here with the operator console in the foreground. The 2966 has a wider range of operating systems than any other 2900 series model. It functions under CME/George 3 to give simultaneous operation of VME/B and George 3. Operators familiar with DME and VME will control the system in the same way with consoles dedicated to each environment.

new_VME/B_users." Perhaps the

last E stands for Easy as interactive prompting should cut the time spent at the screen. Access to the system in all environments is by a single System Control Language.

VME/B has been enhanced in terms of scheduling, comms, SCL, recovery facilities and, for the large user, extensions to the

number of concurrent virtual The new VME/K will be on the market next April and is recommended for users with high-demand TP systems. "An easy transition path for DME/3 and DME/2 users" is promised along

with an IPA interconnection capaicL's Information Processing Architecture (IPA) is a structure for connecting systems and

nises to impact itself on the New facilities include remote session access, file transfer, distributed message routeing, distributed application and X25 support, all helping to decentralise

Useful life

2968

2965

Ops managers urged to become company decision-makers

OVER 40 operations managers gathered under one roof for the Infotech Operations Management Forum on November 18 and 19. The prevailing tone of gravity would have been enough to terrify the pluckiest trainee op -but no such humble being was in sight. Entitled The Operations Fac-

tory, the event made the reasonable assumption that there is an analogy to be drawn between operations and the manufacturing process. As in a factory, the opera-tions department converts raw material (data) into a finished product and the emphasis throughout was on production.

This concentration enabled speakers and delegates to manoeuvre proceedings to what really concerned them: Ops managers should be real managers.

The seven speakers pitched their remarks towards ops managers rather than factory hands and ebullient American chairman Phil Dorn summarised matters by. saying, "Join the corporation. Meet its needs and objectives, That's why you're there."

The opening speech did much to bolster collective ego. Andy Smith from the Investment Bank of Ireland (Bire) said: "The operations manager often controls the largest proportion of staff in the installa

relevant. So you abandon that approach and look round for an alterative, and just by chance you as in the past and the involvement of the unions is likely to increase. think of the General Problem Solver (formulated by Newell, Shaw and Simon in 1958).

"The operations manager may find himself negotiating condi-tions, and the practice of staff consultation is also increasing. These are areas which require skill and talent and must be approached

by Paul Fisher

No, don't go - this simple statement implies a lot. The technique breaks down the Big The third speaker, Phil Wilson (see Op Spot, October 2) also took up the managerial cudgels: Goal into sub-goals, and reduces the difference between the initial

"The operations manager now has the power to become a driving force behind his company's business advancements and he must come down from his technical ivory tower and take his correct place among his company's decision makers.

"This can only be done by building the firm base of an efficient operations department.

The last speaker on the first day, David Marshall from Rowntee Mackintosh, stuck firmly to the factory analogy. "Factories," he said, "are measured by performance."

Schaefer made a speech entitle "Today's trainee, tomorrow's...?" in which he stressed the relevance of seeing operations as a long-term career. Schaefer emphasised the

dimension Bit Pad has RS232 parallel or IEEE interfaces. Bit Pad consists of a 15" sq. digitizer tablet PET USERS SAVE £100 AN IEEE BIT PAD CAN BE YOURS FOR ONLY £498 尴

PROGRAMMERS' PAGE

LAST week's heuristics was an

An everyday task is to find your

o devise a machine function that can cope in all circumstances is not

Supposing that you define the

problem as a difference in location

between you and Slavedrivers Ltd.

dismally since there are any

number of things you could do:

clean your teeth, kick the cat, take

which happens to be further away

mm work. Most of them are ir-

The kernel of this nut is means-

end analysis and it makes a strong

appeal to common sense. Spelling

serve goals or ends.

t out, actions or means exist to

and goal states by using an appro-

Applying it to the long trek to

work: the transport operators I have at my disposal are to catch a

Operator

GO-BY-TRAIN

Here a heuristic would fall down

a simple matter.

End to heuristics advance over the previous simple search trees, but, surprise, surprise, they also have their limitations and off we go — another problem, another technique. by means of Strips way to work in the morning. "That's a cinch," I can hear you think, "it is what happens when I get there that's the problem." But

and the buses and trains don't stop detailed information about the difat my house; so I lower my sights to a sub-goal of getting from home needed to make it work. From to the nearest station. I opt to cycle, but have to contact the shop where the puncture is being re-

This is not a question of location but a difference of information, so

phone. I choose the latter and re-

ceive the information that my bike

Now the problem is again one of

location difference, and is solved

With this sub-goal achieved I

A whole sequence of operators

can be incorporated into a master

plan. The operators themselves

correspond to the moves of a heu-

ristic, but a major distinction is that a heuristic is capable only of quantitative differences, while

right operator for the job to be

But nothing is indispensable.

can collect my cycle and go on to the next sub-goal of getting to the

with the operator walk-to.

station . . . and so on.

Preconditions

CHECK A-AT-B

Fig 1. The operator table for transport operator Go-by-train for location differences.

CHECK B-IS-STATION CHECK C-IS-STATION

ferences involved in the task is

Strips, the Stanford Research Institute Problem Solver, is the plan part of robot Shakey (who lives in a world of seven intercon-I have to produce a communica-tion operator such as shouting, writing a letter, or using the tele-

Delete list NOTE A-AT-C

uses means-end-analysis but does

not need the mass of detailed info

about differences because the in-formation is defined within the

operators, and Strips can work out

the differences for itself and

where A goes from B to C.

Strips can also be used on its own to solve problems outside Shakey's limitations. It, like GPS,

Not perfect

Smaller plans can be combined into larger and yet larger plans in a triangle table. The table is structured according to the meanschoose the relevant operator. These are contained in a table lar plans, so that they can be stored divided into four columns (see and adapted to the prevailing situ-

Figure 1).
Strips uses the table to make a . Strips, though, is not perfect. It plan for getting me to work. Its goal is defined as changing the da-tabase from containing me-atcannot cope with dependent preconditions which change with surrounding circumstances, and if means-end qualitatively measures the type of difference, location versus information. This allows the parameters A, B, C, seems OK, offered a choice of relevant

to apply first.
Next time, we attack the Tower
Block problem and come to grips Strips rephrases the problem to me-at-B, to be changed to me-at-

IS this the Top score? Last week the letters page wound up the correspondence on Tops courses which had been rather taking over the floor. And since Programmers' Page sparked off the whole discussion (Oct 2), it is fitting to end with a tribute to D. M. Birch of West Yorkshire, who finished a Tops Systems Analysis course in August and who has written no fewer than 372 letters of application, has registered with PER and 23 other employment agencies, and made uncountable telephone calls — but is still without a job. But Mr Birch hasn't given up, and is currently tracking down further leads. Good of the table against the information

. Check A-at-B

Check B-is-station
 Check C-is-station

Alas, I do not live by the tracks, o home-is-station is not part of the latabase and the second condition fails. However, Ilford-is-station is there, so Strips now has a choice of whether to specify Home or liford

as B, leaving either condition 1 or condition 2 unsatisfied.

If B is taken as Ilford, condition 1, me-at-llford, is absent and becomes the new sub-goal. The whole process in the state of whole process is restarted to select Ilford to the database, and act as a starting place for the next location

given up, and is currently tracking down further leads. Good luck, D.M. For Go-by-train the precondi-**Best way to solve**

> the staff problem IF you trek down to TRAK today, you will find Kalamazoo's new introduction to, and the history of, computer training centre. Get it? TRaining At Kalamazoo. This Bir-

programming and systems stall by setting up its own TOPS course. Fourteen leading West Midlands companies were contacted to thrash out the twin problems of recruitment and training, and the result is a new extension to Kala-mazoo's existing Client Training School especially designed to

house TRAK and hold TOPS. The first 20 students, selected from 100 applicants, started the 16-week programming course on November 10 and are progressing well. There is an eminently practi-cal flavour to the syllabus, and already students have become well involved with the hardware mainly interactive minis.

Instruction is from practising computer specialists, often Kalamazoo's own systems staff, Kalamazoo states that its most important aim is to prepare students to

Thirteen modules take the

2,000 people has decided to combat the local shortage of trained programming and successful and specific and computing right through to micro study and a project takes up a subsequent 20 days. Also offered is an intro to analysis and design, and a survey of general business

Puzzler

(ERE'S a nice little companio piece to the November (Puzzler, which had SIX, SEVEN and SEVEN summing t TWENTY This time all ten digits from 0

See page 37 for solution

Advanced enough

 Norsk Data's experience-over ten years-has gone into the design Our systems were interactive from

the beginning

- The NORD-100 was the first high performance CPU on a single board From 128 KB physical memory up to

Friendly enough

 The most advanced operating system on a mini-SINTRAN

- Designed to help the programmer and the user - Time sharing, real time, batch and

communications can run together Up to 64 users

FORTRAN, COBOL, BASIC, PAS-CAL, RPG II. A Codasyl DBMS, ISAM, data entry

and text processing software avail-EMUIATORS for IBM, CDC,

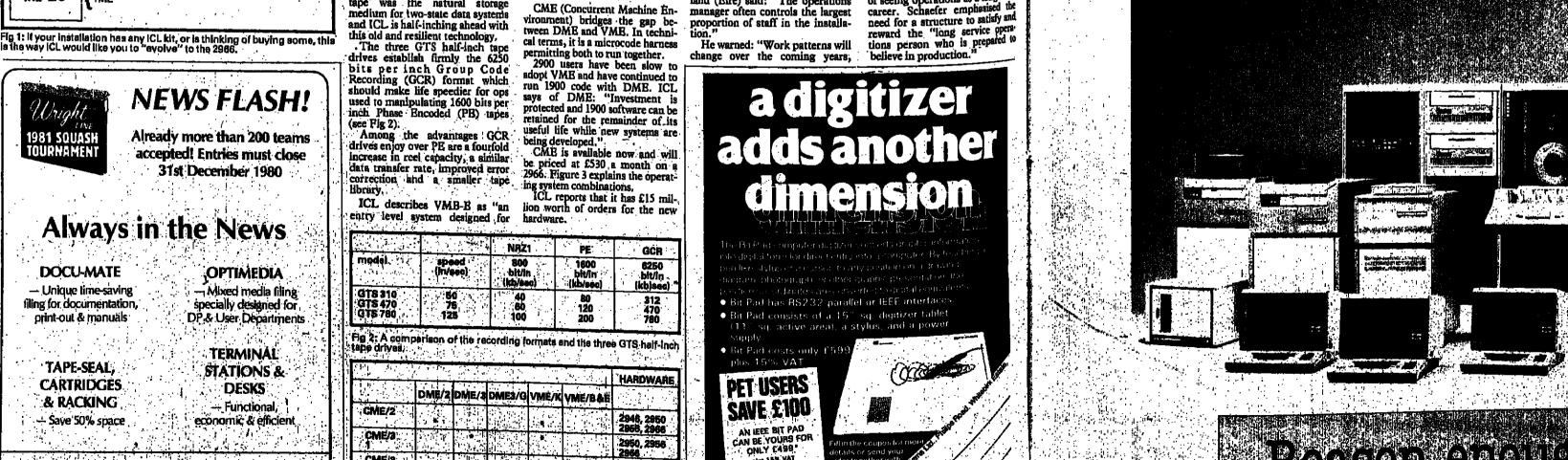
Honeywell X.25 packet switching

Expansion enough

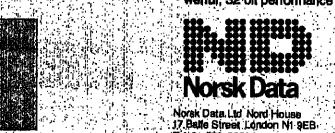
Over 2000 MB of discs on one system, tapes up to 6250 BPI, and a wide choice of printers, other peripherals, and interfaces
The NORD-100 can be configured
with a NORD-500 CPU to give po-

werful, 32 bit performance

17 Palle Street London N1 9EB-Tel 01-278-5501









COMPANY NEWS

Market worried by ICL portents

lowest level this year, at 109p. They have plummeted to this nadir not through the general economic climate, but because of real and growing share market under-tainty about what ICL's 1979-80

Stockbrokers Wood Mackenzic's ICL watcher Graham Meek revised his forecast of company profit downward last month from £49 million to £42.5 million. Since

'Wrestling back magnetic tape business from US'

CAVENDISH King and Computer Supplies are "trying to wrestle some of the magnetic tape market back from the American boys", in the words of technical director the words of technical director from South Africa, Australia and India.

The company has bought plant machinery and technical staff of Racal Zonal's computer magnetic E250,000 deal. EMP will also offer tape division and has formed a new a computer magnetic tape cleaning subsidiary, Euromagnetic Pro- and testing service for customers

Mowland says that EMP has already won a number of products and will appoint distributors throughout the UK, Europe and tifier.

H-P shatters records quarter, overseas orders were up

RECORD sales, profit and order-book figures have been announced 23% while domestic orders rose by by US computer and test equip-ment maker Hewlett-Packard for Data products accounted for 49% of the year's sales of \$3.1 billion, up 31% from \$2.36 billion in 1979. Over the year profits were the year just completed. Overseas orders accounted for 52% of this year's total, but have fallen for the up by a similar percentage, 32%, while this year's fourth quarter second quarter running.

Domestic orders rose by 8%

from the third to fourth quarters, profits were up 45%, while overseas orders fell by 4%. The 1980 order growth rate was Compared to last year's fourth below last year's level.

Penn Central drops bid which to evaluate the GK exposure of the liabilities of a controversial subsidiary.

covered rump of the formerly bankrupt Penn Central Railway, has dropped its \$660 million bid for GK Technologies, the Connec-The latter was responsible for some of the electrical work on the Las Vegas MGM Grand Hotel in Penu Central disclosed its which 83 people were killed last reason for abandoning the bid as Friday.

2,500 redundancies.

emotional aspects deriving from the poor results from other British Depending on the accounting treatment ICL gives to these items, and remembering that closcompanies. Courtaulds has produced half-year profits of £2.8 milcorresponding period of last year. ing Dukinfield with its associated redundancies will fall within this year's accounts, market rumours have hinted at the half-year figure redundancies and closures which began with ICL's rejection of its of £20 million as the profits for

Like all Stock Exchange rumours, they represent an amalgam

existing tape libraries.

Mowland points out that Caven-

980 graduate intake. ICL has made few recent significant product announcements, and will miss the order book stimulus that such announcements provide. Almost alone of ICL's current

products, the ME29 is maintaining sales ahead of estimates, the company claims.
This is obviously insufficient to

lion against £30.2 million for the

from an almost unbroken series of

The deductive element derives

nvince a nervous market that ICL shares are a good buy. Last year Amdhal suffered disastrously and IBM badly, from

customers switching to renting or

easing rather than outright purpolicy to reveal what its rental base is but any major switch by customers to rental or leasing from pur-chase could have the kind of impact on company figures that the

Saturday 'special' quartet thrives

NMW's profits are related closely to Stock Exchange

has been high enough to anticipate maintaining at least least year's profits.

Applied Computer Techniques Ltd, the hottest computer stock

trading at present, rose to 470p. The Rule 163(2) market is one

in which each bargain has to re-ceive Stock Exchange approval and is due to be replaced by the United Securities Market late

next year.
Under the USM regime, unrestricted trading is allowed once a company has been admitted and the field is dominated by small

cellor's announcement of in-

creased North Sea taxes. Fortu-nately, Sir Geoffrey has not found a current way to penalise

practice, average on-site life was

According to current American estimates residual value of a £3 million 370 installed in 1976 was

No one contacted in the UK

would quote more than £150,000

for the 158, best of the 370s, even

with all mod cons" as a salesman

explained. The same source said

Lloyd's has made provision for

the losses against the profits for the period in which the deficits oc-curred. During that 1977-80

that a 370/135 was worth nothing.

less than three years.

less than \$300,000.

ny suffered from the Chan-

next year.

FIRST quarter earnings at Litton expected to be the business

Industries reached a new record systems area. Turnover was also

level of \$61.3 million, up from up from \$953 million in the first

\$55.57 million for the same period quarter last year, to \$1.12 billion last year. A major contributor is

turnover and this year's volu

THE Financial Times reports on Rule 163(2) market trading only on Saturdays, which explains why not many people have the opportunity to know how the Stock Market views performance of the four principal computer companies trading on that medium.

Quest Automation reported

Quest Automation reported turnover up from £5.077 million to £7.501 million last year and was trading this week at 170p, 3p down from its all-time high.

Specialised commodity broking bureau Rolfe and Nolan, which jumped to the top of Green and Co's (atockbrokers) profitability league table last year, traded at 74p, 4p above the severage for that period. average for that period.

Nantwich-based stockbroking

bureau NMW has climbed spectacularly, from a price early last year of 205p to a 363p high ast week.

NWW has written off most of

the expenditure on the two ICL 2972s acquired earlier this year

Into the billions at Litton

software supplier and most of the recent de-

in at

at Globe Computing, a supplier of DEC software, after a row caused the departure of one of the company's founders. Nicholas Brackenbury has left after disa-greements with Richard Waldie over the management of the com-pany, part of the London-based Computer Trading group.

Receiver

Brackenbury says that accounting problems between Globe and the Dutch company Accord, 50% owned by Computer Trading are at the bottom of the row. But Waldie says that there have been "multiple disagreements" which have resulted in both parties consul ting their solicitors. He added that the Dutch company is simply dormant but that others in the Computer Trading group are trading satisfactorily.

Brackenbury alleges that he has been fired from the board of Globe and from another Computer Trading company, Maindeck Computer Engineering. He has also resigned from the board of Accord and the Computer Trading subsidiary Waltham Management Systems.

Globe had an order book of about £250,000 at the time the re ceiver was called in, according to Brackenbury, but details of it final trading position are not avail-

Computer Trading has about 20 employees throughout its subsidia-ries, some of which earlier shared directors and offices with Globe.

Pet deal for CBS

MINICOMPUTER dealer CBS Consultants of Birmingham has moved into the microcomputer field by becoming a Pet commercial systems dealer for CBM. Up to now CBS has dealt with Adler, Olivetti and DEC systems.

Cray shares

CRAY RESEARCH has placed 4.5 million shares on the New York Stock Exchange. The first 100 shares purchased went to John Rollwagen, company president.

The \$400 million faux pas been palliated for Lloyds by the values between 10-20%. In

In real terms, losses have prob-

ably been more than halved by inflationary effects, a strong pound

and legal delays introduced when

believed due under the leasing

In the US, where much of the

remaining \$800 million of in-surance was carried, the losses

have led to considerable expansion

in the number of companies

involved in forecasting residual

values of large computer systems.

The London office of Arthur D.

Little and Co, one of the organisa-

tions involved, was unable to con-

firm whether anyone in the UK

had ever requested one of these

Based on the policies, average

expectation was for a 5-year life for

rising pound.

terms.

ton has produced revised figures showing that the much-publicised losses sustained by Lloyd's on computer lease insurance contracts

The largest insurance market in the world, Lloyd's wrote insurance

failure to relate both IBM's market share and its likely product strategy to what was happening in

Losses of \$450 million, when fees are taken into account have

have risen to \$400 million.

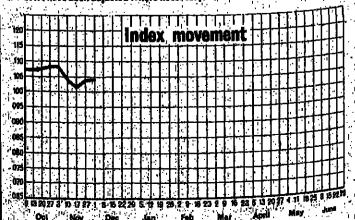
Itel tried recovering the money it policies, mostly relating to IBM's 370 series, guaranteeing the lessor a fixed sum should the lease be terminated early.

Lloyd's has sustained arguably its largest loss as a result of lack of proper understanding of the speed at which technology was changing, for which financial men might be

forgiven. Far less understandable was the

period, Lloyd's has reported the second highest profit ever, despite the leasing setback. CW SHARES TABLE

Pence		London Slock Exchange	Pence				US Stocks			
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PEOPLE and EVENTS



CLIMBING the walls at Real Time Products is practice for the real thing. Dr Brian Wyvill, a senior software consultant with RTP, is part of a four-man team who will be climing Cerro Torre in Argentina via a route which has never been climbed before in its entirety. He is seen here supported by RTP directors Ed Patient (left) and Steve Collins.

by Don Liveware File HAVE YOU EVER THERE'S NO HIERARCHY NOTICED ... OF GOALS ... \$ 15 m ... HIS TREE-SEARCH WHEN YOUR DOG HAS ENTERED ..

DIARY

DECEMBER 4

Visit to Westgate Exchange. BCS

Modern language translation.
LD.K. Kelly. BCS North Staffs oranch. Physics lecture theatre, Keele University. 20.00.
Buying computing conference. Institute of Furchasing and Supply. Europa Hatel, London W1.

DECEMBER 9 vemote maintenance. BCS Birming-n branch. Wheatsheaf Hotel, Shel-1, 18.30.

confessions of an ex-computer audi-or, C.J. Quaraby BCS Bristol oranch, Hawthorns Hotel, Bristol

Applications and use of Apple microcomputers. G. Bell. BGS Humberside. branch. Grange Park Hotel, Willerby. 19.30.

Modelling for industrial and economic development until 2000, BCS.mathematical programming group. Dr Weather forecasting. Dr R Riddaway, BCS Croydon branch. Pairfield Halls, Croydon, 19.15.
Rutter of databases. Mark Hobson, BCS Harlow branch. Saxon Inn., Harlow, 19.30.

The Saspac project and the 1981 census. Dr Keith Francis. BCS Local Government. group. Association of Queen St. Loadon SW1. Phone in advance Jennifer Griffith, 01-828 2333, Computered.

mic development until 2000, BCS.mathematical programming group. Dr A.N. Elshafei. London School of Economics, London WC2. 18.30.

Digital data transmission. I.N. Slater. BCS Newcastle branch/IERE. Ellison Bldg, Newcastle Polytechnic, Newcastle upon Tyue. 18.00.

Computerised control of traffic in London. M.J.H. Chandler, BCS N. London branch. West Lodge Park Hötel, Cockfosters. 19.45.

Sjudent evening with talk. BCS Sussex branch. Brighton Polytechnic, Computerised management and mind of Mini-Metro production. sex branch: Brighton Poly Moulsecomb, Brighton, 19,00.

DECEMBER 10

20323.

The standards we need in micro systems. T. Spence. BCS Edinburgh branch. Mountbatten Bldg, Heriot-Watt University, Edinburgh. 17,30.
Visit to IBM Manufacturing, Havant. BCS Hampshire branch. Havant. Phone in advance M. Must, Salisbury 2022.3

Goodall to join MicroAPL board

Goodall, as programming manager for Ciba-Geigy, has recently pioneered the implementation of the UK's largest network of decentralised APL micros. He describes himself as a grammar school dropout who learnt to be a welder at night school and emigrated to Vancouver in his early twenties.

Dr Ray Scott has been appointed to direct Perkin-Elmer's Applied Re-search Department at the Connecticut Instrument Operations Centre in Nor-walk, US. He is presently editor of the

Nigel Schollick has been appointed director of studies at Urwick Nexos. He has had 30 years' experience in the omputer industry, most recently serving as personnel and training manager for ICL's Marketing Division.

Ray Fortune has been appointed vice-president and general manager of Data General's European operations, based in Paris. He has held a number

A FORMER chairman of the APL Users' Group, Michael Goodall, is to join the board of MicroAPL as direction the board of MicroAPL as direction the board of MicroAPL as direction to DP. In 1969 he got his first job as a programuner.

He returned to the UK in 1973 and joined Ciba-Geigy where his career has followed the familiar path of senior programmer, chief programmer, systems analyst and programming

Kenneth Winckles has been appointed to the board of Information Technology, as non-executive director. He recently retired from the Hill-Samuel Group, where he was financial director, to become a business consultant. David Cairns has been appointed financial director at Information Technology. He has speed the proof street. nology. He has spent the past seven years in North America with Northern Telecom, in senior financial and man-

Phil Stott is returning to field activity to become national sales manager for Honeywell's page printing system operation. He was formerly manager of sales training for the company. Mike Symers and Neil Skinner have joined the sales team of MBS Data Systems in Surrey.

Jill Partridge has become systems consultant at MSA, joining the company from Gordon and Gotch where she worked as senior sales executive. Mike Barnes has been appointed sales manager for the general systems division of IBM UK. He foliaed the

Dave Gronland is now general man-

division of IBM UK. He joined the company in 1968, and served most recently as manager of the general business division marketing staff. John Stanley has been appointed general systems director for IBM UK's General Business Group. He joined the company in 1968. In 1976 he went to the US to serve as director of organisation at the General Business Group/International in White Plains. He later transferred to corporate headquarters in Armonk, as director of compensation.

Dick Sheppard has joined TSE Computer Supplies as marketing manager. He was previously with Memorex for 13 years.



THE Gino Users' Group will meet on January 6 at the University of Leeds, at 10.30 for 11.00a.m.

Talks will include TV Today and Tomorrow, from Julian Symons of the BBC, Gino on Micros, and Raster Graphics, and there will be views and the symons for the strength of the symons. comments from industry, users and the CADCentre.

The fee is £6, and half price for group members and their guests Cheques to Mrs M. Dowson, Gino Us ers' Group, Engineering Dept, University of Leicester, University Road, Leicester LEI 7RH.

The aim of the group is to provide a forum for the exchange of experience and ideas on the Gino family of CAD software products. It meets about twice

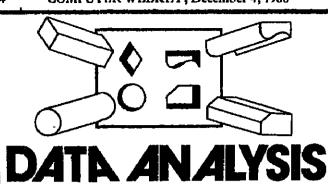
Compaid VP

THE international Compaid Users Group has elected British engineer Bill Elliot as vice-president. Compaid is a

Elliot as vice-president. Compaid is a computer package, and the name stands for Control of Materials,. Planning and Isometric Draughting. Elliot is general manager, design engineering, with the process plants division of Constructors John Brown, and has been responsible for CJB's implementation of a 3D graphics system which produces input to Compaid.



The count down Get ready for Chizens Band radio with a brand new magazine that get ready for Chizens Band radio with a brand new magazine that wou how ce works the show you how ce works the show you how ce works hasbean Get ready for Citizens Band radio with a brand-new magazine to know. We show you how ised to know we show you how ised to know we show you want to know spread on customised tells you everything you want to know of the special deals on CB World sweat shirts, and how to use it. We offer special deals on CB world sweat shirts and how to use it. We offer special deals on CB world sweat shirts and how to use it. anateur and the aircraft modeller? FIRST ISSUE OUT NOW 60P Involved and get this very first involved and get this very first involved involved in the world's largest tutelines of the world's



have looked at the two major concepts of functional analysis functions and events. A function B, C, and D; Function D consists of subfunctions E, F, and G. was defined as a business task and an event was defined as the trigger

which starts the function. In this section, the concept of more depth in the context of the first phase of functional analysis --functional decomposition. A business can be viewed as a single funcsists of B and may also include C. tion which can be divided (or decomposed) into a hierarchy of sets of successively lower-level functions. Thus the highest level func-tion of a Trading Bank is likely to be Banking, and the sub-functions

could be Lending, Borrowing, repeated several times. Customer Servicing and Money

This progressive analysis of functions into more detailed funcrions is termed "functional decomposition". It allows the functions of a business to be described from the highest possible functional level to the most detailed level required, using a single method and

Functional decomposition has several purposes.

It ensures that the analyst completely understands the business and the business activities before

any design takes place.

The results of functional decomposition are used for access path analysis (and thence database design), transaction design, program and system design, and in deter-mining the attributes (the data) needed.

Diagrammatic conventions

As with entity models the results of functional analysis, including functional decomposition, are documented using diagrams and supplemented with forms which

In Figure 1 the diagrammatic conventions used for functional decomposition are attracted with the diagrammatic task of "Entertaining Guests." In order to entertain conventions used for functional decomposition are shown. An event is represented by an arrow, a function by an oval box in which the name of the function is decomposed.

how the functions are related when decomposed. In Figure 1, Function A is composed of subfunctions

Where functions are exclusive they are shown as Diagram 4. In this example an occurrence of Function A consists of either B or C (but not both). Optional functions are shown as in Dingram 5. In the example Function A con-

Where a function consists of a subfunction which is repeated several times it is shown as in Dia-3) Functions can occur quite legitigram 6. Thus, in the example, Function A consists of Function E

How to decompose functions Since functional decomposition

is best described using an example, a very simple everyday function will be used first to demonstrate the principles, and then a function related to the hospital model will be provided which can be used in the later articles dealing with access path analysis, data flow diagrams and other topics.

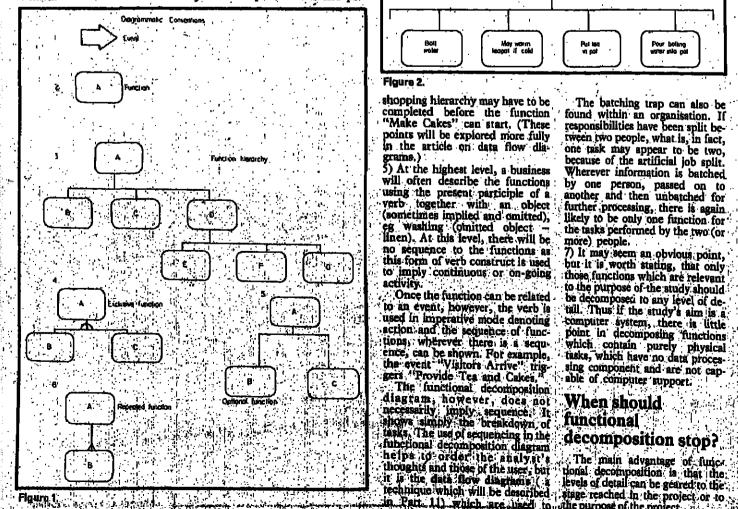
Functional decomposition is "top down" method of analysing what a business does. The first highest level function of the area under study is and then proceed towards greater levels of

 In Figure 2, the highest level function in our simple example is. that of household management, composed of the sub-functions of

shopping, entertaining, washing, cleaning and so on.

The highest level function has thus been broken down into all the performed in order to complete it.

tasks become more and more de-tailed and specific. It is also pos-



Breakdown Section 1 - Part 10 of our series describing a of functions by Rosemary Rock-Evans

aying out the cups and saucers.)

In practice, it is usual to com-

plete the data flow diagrams for each level in the functional hie-rarchy, in parallel with functional

6) There is a danger of defining

functions as if one were defining a batch system. This is known as the

batching trap and must be

avoided, as it can lead to the

tions and badly designed

programs. Batch data processing

forces serial processing of data. The data is built up into a batch to

undergo initial processing and then passed on as a batch to the

next process and so on. This form

of processing, however, is usually artificial and does not reflect the

task "Record and Edit Order".

The batching trap can also be found within an organisation. If responsibilities have been split be-

tween two people, what is, in fact,

one task may appear to be two,

because of the artificial job split.

Wherever information is batched

further processing, there is again

likely to be only one function for the tasks performed by the two (or

more) people.

7) It may seem an obvious point,

but it is worth stating, that only those functions which are relevant

to the purpose of the study should be decomposed to any level of de-

be decomposed to any level of de-tall. Thus if the study's aim is a

computer system, there is little point in decomposing functions which contain purely physical tasks, which have no data proces-

sing component and are not cap-able of computer support:

rarchy to specify the events which

start the function, for example, the function "Provide Tea and Cakes"

can be triggered by the event

1) Each function in the hierarchy is

the sum of its sub-functions. A function cannot include sub-func-

tions which are not described or

whose meaning is not conveyed by

'Make Tea'' couldn't have in-

2) A function must be broken

down into more than one sub-function - "Provide Tea" could

not have consisted of one task,

mately in more than one hierarchy.

The function "Boil Water" may

also occur within the hierarchy whose main function is "Provide

Dinner". (This "commonality" of

unctions is of especial importance

in the design of systems, programs and transactions as it can indicate where one transaction could be

used to implement more than one

function and also where common

n one hierarchy may be the event

which triggers off a series of func-

tions in another hierarchy. For example, the function of "Buying

the Ingredients" within the

in the article on data flow dia-

Once the function can be related

The completion of one function

the function name or definition -

cluded "Make Cakes".

'Make Tca".

"Visitors Arrive".

of our series describing a system design methodology

for each event, their dependencies Patient's Death and where parallel activities can occur. (It should be obvious that it is not invalid to have functions of Deaths completed in parallel, eg the task of making the tea could be done in parallel with the task of

Analyst: R.R.E.

A patient may die either when he/she is in hospital or is not in hospital. If the patient is in or out of hospital, any operations the patient may have booked are cancelled and details of the death recorded. If the patient is in hospital the bed in which the patient was staying in the ward is freed, so that it can be reallocated. The patient's medication record is also changed to show that the patient no longer requires medication. Details of medication are, however, kept for historical analysis.

Frequency: Forty per month

Responsibility: Hospital Administration Depts and Registrar

Location: Central **Records Dept**

actual business activities, where the business may actually regard several processes as one function.
For example, "Record & do initial validation on Orders" might be one process, then "Pass Orders against Main File and further validate" might be another process. The user would regard this as one the level required, probably using the top three or four levels in the hierarchy. (This is shown in our Household Management example

as "Phase 1".) The next stage might be used for transaction design. At this stage in the project, therefore, the function hierarchy would be decomposed further until enough information was known to enable the transactions to be designed. At this stage there would be a decision as to which functions were to be compu-terised and which were not and what were the priorities. In our Household Management example, this stage might equate roughly to

At this stage the elementary functions will have been established. An elementary function is not the lowest level function, as it is possible to decompose functions down to the level of attribute types. An elementary function is a function which we do not want to decompose further, because the task is better achieved using Eng-

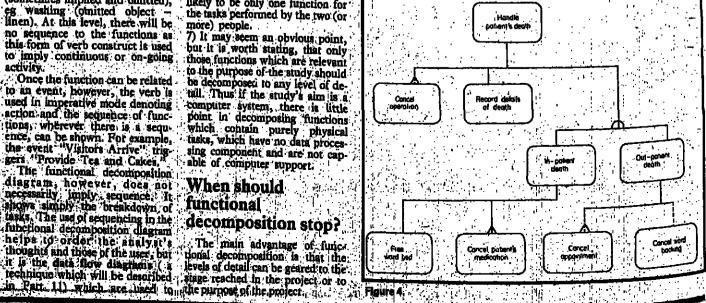
Definition of functions

The choice of elementary functions is not arbitrary, it is based on criteria which will be described in the access path analysis article. It is sufficient to know at this stage, however, that decomposition does not go on and on, but stops at the elementary function level and structured, or plain English descriptions take over.

quiries on Patients, another Admissions, and so on.

The Data Analysis methodolog

was developed at CACI by lat Palmer.



Function Name: Handle Synonyms: Administration

Date: 8.1.80 Version: 1 Status: Draft

If the patient is not in hospital any appointments he may have are cancelled, and if he has been walt-listed for a ward bed this booking is cancelled to allow the bed to be reallocated.

Preceding Event: Death

The first stage of a project, for instance, is often the "user requirements" stage, which requires Every function in the function hierarchy must be defined, so that at every stage there is a definition broad indication of what the users' requirements are in terms of functions in order that the users can agree on them and decide priorities before the next stage is started. Functional decomposition would thus be completed down to

at this level.
Functional decomposition has many advantages over the tradi-tional English Language text ap-

available from which to work and proceed further. Thus, if there is a change of analyst, for example, from one stage to the next, there can be continuity in the analysis and no effor will be wasted in redoing work already completed.

Toshiba-built machines, based on the Honeywell Level 66, formerly GB 6000 series, were called the 600 and 64 channels with an aggregate In Figure 3 a very simple example function from our hos pital model has been docum The next big upheaval was To-shiba's decision in April 1978 to kept deliberately simple.) la Figure 4 the function hierarchy is shown for this-function. Notice that for each description of a function only one level below in the hierarchy is described. Cancilling appointments would itself lavolve. drop out of the computer business a move which was not dramatically obvious to the outside world because NTIS was handling Toshiba many subfunctions not described

Topped out how the Ministry of International proach. Text is always one-dimen-sional. All the detail has to be Trade and Industry, MITI, should nounced by NEC last year as its react to the demise of Toshiba's computer operations, because Toshiba to the Acos 77/350, 450 and 550. forced into the same paragraph and sentences as the text which shiba was at the receiving end of To underline how far NEC had gives the overall picture and "sets Japanese government subsidies under the VLSI development programme.

moved away from its close technological dependence on Honeywell,
NTIS president Shigeo Imamura tail cannot be expanded progres-NTIS president Shigeo Imamura integrate the incompatible But in addition to marketing pointed out that these new Honeywell GCOS operating sively within the text. The description usually has to be rewritten, Mitsubishi invests \$100 million in

Another advantage is that the task of function decomposition can be partitioned and allocated very easily to different analysts. For instance, one analyst could study Hospital Scheduling, another In-

In Part 11, data flow diagrams, will be described. These diagrams are used to show the sequencing and ordering of functions and their

oishi group could alone justify the The big loser will be IBM which has been the main computer supplier until now to organisations like Mitsubishi Corp, the biggest trading company in Japan, Mitsubishi Heavy Industries and Mitsubishi Electric which embraces the Mitsubishi

AT a cost of more than \$100 million, industrial giant Mitsubishi is developing a family of IBM-compatible mainframes purely for the apanese market. But sales to the wast companion in the sales to the

ast companies within the Mitsu-

It is an indication of the might of

the Japanese economy that two

full-blown mainframe computer

suppliers can survive and flourish

primarily on domestic sales. Those

firms are the computer division of

Mitsubishi and Nippon Toshiba In-

formation Systems, the company

that handles domestic marketing

for the computer manufacturing

Both organisations became

established as mainframe manufac-

turers by forming licence agreements with US firms. Mitsubishi

got into bed with Xerox, while NTIS started life with a comprehen-

reliance on

NIPPON Toshiba Information Systems was set up in 1974 to mar-ket the mainframe computers jointly for the two companies, NTIS was also the agency acting on behalf of NEC and Toshiba in

manufactured by Nippon Blectric
Company and Toshiba as the Acos
series. The link between the two

companies was Honeywell, whose machines were already being at NTIS are still engaged in VLSI

had taken over the computer side of General Electric (which had a licence agreement with Toshiba). the Acos series by the withdrawal of the 600 and 700, NEC brought out the Acos 77/500, 800 and 900,

the 200, based on the Honeywell family with the formidable Acos

Level 62, and the 300 and 400, which followed the design of the CII-Honeywell Bull Level 64. The that include a power rating of 15

Machines built by NEC were and has now topped out the Acos

manufactured under licence by

NEC and which two years earlier

side of Nippon Electric

sive package of hardware and soft-

ware licences from Honeywell.

Now both organisations are well

on their way to a complete break

from the US origins of their

hardware and software tech-

The Japanese government's VLSI

programme, which ended earlier

this year, provided them with in-

house semiconductor manufactur-

ing and development expertise

comparable with any US company.

Now the government-sponsored

£100 million Electronic Computer

Nippon sheds its close

Honeywell techniques

About 400 of the 800 work-force

To fill the gap left at the top of

data rate of 100 megabytes.

Instruction set

fited from the VLSI programme, the air-cooled 1000 employs cur-

also used in the machines an-

Illustrating how NEC has bene-

rent mode logic devices with up to 1,200 gates, and also incorporates 6,000 gate-per-chip MOS logic circuits and 64K RAMs.

The same advanced devices are believe agreement.

drawback.

the means to further modify their

US originated systems software.

The most dramatic change is the

move to Japanese language

talked to key men from both orga-

nisations. They were Shigeo Ima-mura, president of NTIS, and Hideo

Ohta, director and deputy general

manager of the electronic products

and systems group of Mitsubishi

Electric. This is the organisation

which embraces Mitsubishi's com-

systems to achieve at least a degree of compatibility. The current line-

up of operating systems, Acos 2, 4

and 6, were completely different

from GCOS and the differences

would become greater, he said.

The desire of NTIS to move

away from Honeywell technology was no doubt encouraged by Honeywell setting up its own Japa-nese subsidiary about two years

ago. When NEC's licence agree-

ment with Honeywell expires in

1982 any new contract signed by NEC will cover only a few essential

features retained by the NEC

'Silicon island'

the preponderance of semiconduc-

tor manufacturers there.

Basic Technology Development As- puter manufacturing and mar-

On a visit to Japan KEITH JONES



whole aim is to ease curve and rot companies, many of whom are ity as Fujitsu and Hitachi, in particular companies within the Mitcular the latter whose VOS/3 operating system is a lot different from MVS.

SHIGEO IMAMURA, president of

Nippon Toshiba information

Systems, The VLSI programme enabled NEC to move away from

Honeywell on the hardware side, while the Basic Technology programme was now consolidating NEC's independence in the area of software, he said.

machines differed radically from Honeywell systems, including the use of a different instruction set.

According to Imamura, NTIS

There were problems on the com-munications side, and the lack of

Japanese language processing facilities was also a major

Imamura said that the basic aim of NTIS since 1974 had been to

all Cosmo customers have moved. According to Hideo Ohta, Mitthat at least 70% of the user base over to the IBM-compatible subish's policy is not to go over had IBM or IBM-compatible systems because Mitsubishi plans eight mips with the new IBM compatible. systems because Mitsubishi plans to introduce a new series of Cosmo nachines before the end of 1980, using 1,000-gate ECL devices.

bishi Electric which embraces the Mitsubishi computer manufacturing and sales operation.

HIDEO OHTA, director and deputy general manager of the Electronic products and Systems Group of Mitsubishi Electric Corp. Tokyo.

Our policy is not to go over eight wrision of the Cosmo operating manager of the computer marketing division, told Computer Westing told Computer Westing division, told Computer Westing division

Hideo Ohta, general manager of the computer marketing division, told Computer Weekly that five machines would be introduced ranging in power from just under five million instructions per second to eight mips.

Announcements would be made over a period covering 1983 and be the use of emitter coupled logic officiality with up to 5,000 gates.

The levices would employ master the four year lapsanese definition of IBM-compatible was different from the meaning in Europe and the US meaning the working would employ master two processors, one executing the veloped by Mitsubishi itself at its

IBM instruction set and the other system.

IBM-compatible systems for Japan for running programs written for no desire to be forced by IBM to patible machines and any Mitsubi-the existing Mitsubishi Cosmo make changes to its machines shi machine needing a computer mainframe family which was based firmware. In this way Mitsubishi more powerful than that would be on the Xerox Sigma line. The will be taking more or less the whole sim is to ease conversion for same approach to IBM compatibil-

to Hideo Ohta, Mit-

-European caution-

MITSUBISHI'S bad experience in the European computer market in the early Seventies has led the com-pany to approach a European comeback with great caution. The main product in Europe was the Model 83 VRC and, according to Hideo Ohts, a total of only 300 had been sold in West Germany; France and the UK at the time that Missubishi, decided to call it a day and wind down its subsidiaries which had traded under the name Mel-

traded under the the magnines plus a read of the magnines plus a read of the trade of trade of the trade of the trade of trade of the trade of trade

The Tokyo headquarters of Nippon Electric Company's 60%-owned subsidiary, Nippon Toshiba information Systems. NEC activities in the US at the moment are confined to selling Astra, a small business system that is now starting to get off the ground after a lot of problems with inade-

quate software. Imamura said that 200 Astras were installed already in the US and that the plan was to sell 500 there this year.

Imamura pointed out that the VLSI programme enabled NEC to Domestic move away from Honeywell on the But the main preoccupation of NTIS at the moment seems to be getting NEC's Japanese language ardware side while the Basic Technology programme was now consolidating NEC's independence in the area of software.
The VLSI laboratories of NTIS software into shape for the domes tic market. It is not interested in buying applications packages from UK software houses, despite the and the NEC semiconductor manufacturing centre are both lo-

cated on Kyushu, the hopes of the Computing Services Association that it may pick up islands. Kyushu is sometimes dubbed "silicon island" because of some Japanese business, and there are certainly no plans to sell NEC packages in Europe.
Toshiba still owns 40% of NTIS Imamura pointed out that the role of NTIS was primarily a

and is participating with NEC in the government's Basic Techdomestic one and that the overseas marketing of NEC computers was handled by NEC itself. One exception was the Middle Bast where market even if it continues to give

Mitsubishi was to entrust the

supervision of the European marketing to its treding com-pany rather than to the com-puter division. While Mitsubishi has no

plans to sell in Europe at the:

moment the company is ac-tive in the US small systems market with two machines sold there as the 8018 and

8038 by its Los Angeles-based subsidiary, Mitsubishi Electronics America. The Los Angeles operation has de-valoped Business Basic for

aims at China

lead of Fujitsu, which is developing a Chinese language processing system.

It will be a substantially rede

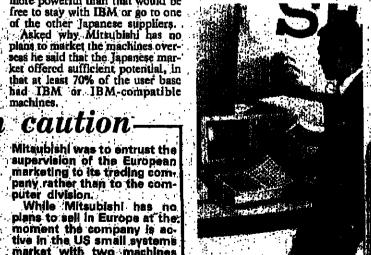
signed version of JEF, Fujitsu's existing Japanese language system,

acceptance as input of Kanji char

Originating in China, Kanji forms a major part of Japanese writing, albeit with many modified characters. It supplements Katakana and Hiragana, the Japanese phonetic alphabets.

Fujitsu is understood to be developing the Chinese language system with the Municipal Scien-tific Committee of Tianin City in

More than 3,000 Kanji characters are in common Inpunese use. With JEF the data entry method involves either a keyboard sensitive tablet where thousands of individual characters can be en shi machine needing a computer more powerful than that would be free to stay with IBM or go to one tered using a hand-held pen.



Many Japanese computer system almed at the domestic market can now process symbols in the form of Japanese writing — a mixture of Kanji symbols and Kana phonesic The Selko 8300, system show the selection of the here can accept far more characters than its keyboard can hendle by spreading them on to 15 pages. The designation of the keys changes as a page is turned.

WESTERN computer manufact turers hoping to break into the potentially enormous Chinese mar-ket would be advised to follow the

A slow and painful path to office of the future

WE all enjoy speculating about the office of the future. What better the manager contemplating investment in office systems.

istics for the next few years' office the next few years' office. How does British technology, systems. test of the imagination than to daydream about serene, efficient communication that multi-station office landscapes dotted about electronic systems provide, but his with workstations and VDUs, and office building is already festooned

not a scrap of paper in sight.

The electronic office will be a reality one day, but a staggering amount of change has to take place before today's office can become todo it once and for all. What's the the office of the future. It will be a right solution? slow and painful process involving dedication on the part of the mar keting and technical people; and it will face office managers and unions with some tough decisions. All these people will have to work closely together - and this is

not always casy. The problem is that every step involves difficult and weighty decisions between widely differing Xerox's Ethernet.

SOVEREIGN - /

data entry, data

Computer Machinery Company's

Multiple Processor Keying

system which provides

communications and

user programming on

the same system -

can now be

He needs badly the enhanced

Bandwidths

There is a wealth of advice obtainable about wiring up. Since the advent of local networks, marketing and technical people have begun to favour broadcast packets switched networks whose ancestry can represelt by the transfer back to be supported back to be support to 64% but a people and at at a specific up to 64% but a people and at at a specific up to 64% but a people and at at a specific up to 64% but a people and at at a specific up to 64% but a people and at at a specific up to 64% but a people and at at a specific up to 64% but a people and at at a specific up to 64% but a people and at at at a specific up to 64% but a people and at at a specific up to 64% but a people and at at a specific up to 64% but a people and at a specific up to 64% but a people and at a specific up to 64% but a people and at a specific up to 64% but a people and at a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a specific up to 64% but a people and a can generally be traced back to

Take wiring up, for example, gabits per second, these networks accommodating devices requiring enough about the Ring to have one of the biggest headaches for have ideal performance character- speeds above 64K bits per second.

and managerial problems which need to be resolved before bright futuristic offices become an everyday reality.

EIII SOVEREIGN

now with ANSI 74 COBOL!

But they use coaxial cable, not the easiest kind of wire to thread along a meandering duct. There is also cause for concern about the ability of these coaxial networks. once installed, to cope with the far ligher bandwidths needed in the

Rather than wire up, we can try to live with what we've got. Some office systems manufacturers are capitalising on the ability of installed telephone cable to handle digital data at speeds up to 64K twisted-pair.

an generally be traced back to breathing space for those who can't face a rewiring upheaval, but Running at speeds up to 10 me-leaves unsolved the problem of

sure up as a solution to this prob-lem? The Ring is a local network of a rather different kind from Ethernets and similar systems. It operates on the "empty slot"

William Newman is the manager of re-

search and advanced development with Logica VTS of London W1. In this article

he looks at some of the basic technical

principle, as if there were an express train circulating continuously, on and off which data It has plenty of bandwidth for office applications. For the office

manager, it has the decided advantage of requiring only a simple Concern is often voiced about the Cambridge Ring's vulnerability to damage of a Ring segment,

causing all traffic to stop; the so-called "man with a spade" prob-

Logica VTS feels confident



PICTURED here with a Wordplex
1 word processor is Rosemary
Gaskell-Taylor. A director's
secretary in the NatWest's merchant banking subsidiary she
says: "I am confident there will
be a job for me at the end of the
decade.

touch is so light, but mainly because the psychological barrier
of worrying about mistakes has
disappeared."

She reckons you don't need
mechanical aptitude to operate
and is all in favour of modern

paper

work product.

decade.
"The word processor," she continued, "has left no one in our department unaffected. Most of us have found our typing speed has increased, partly because the

Blectronic Filing System as a re-placement for the familiar filing

cabinet. This is a typical example

of the kind of change that seems

Consider, for example, the

many kinds of file kept by a secretary, and then try to imagine re-

presenting them electronically. They include correspondence files,

invoices, purchase orders, memos and reports, all filed away neatly in

Little heaps

both natural and beneficial.

nouncing a Ring-based local net-

ting issue.

With office systems companies moving aggressively into integrated text-cum-voice systems, exemplified by Nexos' Delta, many current notions about documents will require radical changes.

Local communication, filing

and document representation are On further inspection there are all manner of potential problems. three major issues that we face in future. Progress on each issue is difficult. Underlying the discus-sion is a fundamental problem: a lack of agreement about the electronic office as a goal.

For example, there is disagreement about who will use the terminals that will populate tomorrow's office; will this remain a clerical worker's, typist's and secretary's prerogative, or will professionals and managers join the ranks of the

Is it possible, as some unions fear, that office systems will do away with large numbers of cleri-

In addition, the secretary keeps binders, ready to hand, of fre-quently-used documents and frequently-updated files. She has inand out-trays and a pending tray, that see a constant flow of docu-

She keeps little heaps of telephone messages. And, of course she has all manner of address lists, check lists, distribution lists, and other lists that are constantly referred to and updated.

It's difficult enough to devise an electronic system capable of repre-senting all these files, but to do so and provide adequate speed of access is well nigh impossible.

The wary office manager is advised to consider very carefully the limitations of electronic filing techniques before committing to any one approach.

Before setting up the system,

the manager must pay careful at-tention to avoiding built-in obso-

Lurking behind the electronic filing issue is an even more formidable problem: document represenation. If we want our electronic files to be useful, we must ensure that the filed documents are legible no matter what device was used to

But in any large organisation we erent kinds of electronic office quipment. It is true that some organisations standardise, but even they have problems with headstrong managers who insist on ouving odd-ball equipment,

As time passes, more and more types of equipment are contribut-ing documents to the file, and the chance of being able to read any

decreases. This problem will be solved only when a standard method has been devised for representing docu-ments; this is a tall order as documents created on the typical present-day word processor contain il manner of formatting effects. Consider next the problem of

accommodating all of today's word processors, and you can under-stand the magnitude of the prob-

Nasty surprises

The answers depend very much on what kind of electronic office systems we design, manufacture and market. The different groups involved in

office systems — technical, mar-keting, managerial, unions — are beginning to develop their own views of what the future will bring. This is unfortunate, since guarantees some nasty surprises in

the long run. The office systems community badly needs a short-term common focus to bring the various interested parties together. Office system market trials are

beginning to fill the vacuum. To learn answers to the above questions, without risking a disastrous commitment of resources, some organisations are installing innova-tive office systems on a trial basis,

to gain experience and under-standing.

Increasingly, they are involving participation, from unions, man-agers and technical people. Early ieers in this field were bank, with its Lexar System, and Xerox market probes in the White

In this country, the govern-ment's Central Computer and Telecommunications Agency (CCTA) has been active in market trials of word processing equipment. Within the more general office systems field, British Telecom is taking a step with Project Albert, Phase I of which has been contracted recently to

Market trials are an importal way of making progress towards the office of the future, because they permit difficult decisions to be made at lower risk and with a better chance of learning for the

Market trials place the emphasis on learning from experience; this is what Britain needs to retain a leading position in the electronic

Call for message services with a human interface

Much work had been done using

minal would be given to every current telephone subscriber in the Ille et Villaine region by 1982.

Gateway

by Professor Inuse of Tokyo Uni-

versity who surveyed fast de-

work facilities, satellite commu-nication and radio nets.

Several papers described the dif-ficulties of protocol conversion and

the requirement for gateway ser-

gateway being developed to link-Transpac to other public packet

These include Telenet, Tymner

This gateway offers a virtual call

Multi-netting has created its own set of problems. Professor Kleinrock from California Univer-

sity gave a paper on a queuing problem. He considered the situa-

channel

and Buronet and a future version

will also include the Canadian Da-

Similar themes were referred to

by Dr Ken Beauchamp of Lancaster University

terfaces and even specialised application of data communication terminals was made at IFIP 80 by with 78,000 terminals in Western Professor Peter Kirstein of Univer-Europe by 1987. sity College, London.

In an address on "New text and there could be 2,700,000 domestic

message services", Professor videotex terminals at the end of the forecast period, hè concluded. Kirstein expressed an overall theme for the conference when he said that far too often the various confidence in Europe's technologicommunications services required cal future were made by other by the user were considered in iso-lation to each other and compatible speakers. M. Texier, representing the Direction Generale des Telestandards were not being de-veloped fast enough either by the importance of early definition organisations providing these serices within a given country or by ministration. He outlined recent ISO and he international planning commit-CCITT work on the definition of a

He also warned that easy access model for network architecture, its advantages and limits. Special emphasis was being made on a netvia public data transmission systems were essential and that any service must be economically work-independent transport ser-vice — now a key issue identified viable. Those countries which adopted a flexible and enlightened by many speakers concerned with standards issues. attitude to the questions would have a clear economic and social primitives. Despite difficulties in defining a family of transport compatable protocols this was the only real way forward, he said.

In describing services France will provide in the next few years, Texier said that one videotext terminations. advantage over those which did

Growing

Dr Philip Hughes of Logica said the Eurodata '79 Survey, underta-ken on behalf of 17 Western Europe PTTs, demonstrated that the usage of data communications in Western Europe is growing more rapidly from a bigger base than was previously thought. Dr Hughes indicated some of the main estimates for 1979 and Eurodata's forecasts for 1987.

It was encouraging to find a veloping communications in Japan strong degree of similarity between and the development of internetcountries. There was less difference in the level of data communications usage between countries than there is between industries, said Dr Hughes. Within the overall market esti-

Within the overall market esti-mates there are strong movements leagues from CCETT in France by users towards the lower costs provided details of an international and higher performances offered by the PTTs for new services such as teletex and videotex. These are networks. expected to be popular and their rapid adoption by users is expected to lead to a substantial increase in the relative importance of the application concerned.

Network Termination Points
(NTPs) are growing at a rapidly
increasing rate with a noticeable
trend towards the higher speeds,
particularly 9,600 bits per second.
The forecasts suggest that 30 per
cent of all NTPs in Western
Rutope will be on public does not. Europe will be on public data net-works by 1987.

Changes

Distribution of applications is tion in which two buffered pocket expected to shift away from gen-eral management and banking to-sharing a common slot in an Aloha person to person communication and information retrieval.

These changes will be brought

' His solution was a scheme called ropological approximation, which about by new services and techno-logies, such as teletex and digital alms to replace approximate solutions of an exact model with an

Dr. Manning (right) of Waterloo University has been researching into distributive computer systems for the last six,

He concluded that a set of processes running in disjointed address spaces and provided With a message switched IPC appears to offer several advantages as a model or software design.



A CALL for powerful message services designed around specific application growth to become the second most important exact solution of an approximate model obtained by perturbing the topology of the interference. This

development involving the Mininet system, two variants the Moose system, HXDP, KO-COS and CMMP, he concluded that a set of processes running in disjointed address spaces and pro-vided with a message-switched IPC appears to offer several advantages as a model for software design. Among these are claimed the ability to distribute a set of processes among machines with minimal impact on design.

was an elegant, if highly theoreti-

cal, paper.

Dr Manning, of Waterloo University, Canada, gave an outline of his work over the last six years researching into distributive com-Taking us through several stages



HUGHES . . . Within overall market punel session were Ms estimates, there are strong move- Peinter, currently with SRP ments by users towards lower costs, and higher performances offered by the PTTs for new services, such as telegraph and videotex are synested to teletex and videotex, are expected to the need for international be popular and their rapid adoption agreements on message serby the user is expected to lead to a vices; Dr Naffah from substantial increase in the relative im- IRIA: and Dr Gupta from portance of applications concerned. India who stressed the bene-

high on agenda SIXTEEN key issues have been identified by the new ficial impact of "leap frog" technology which message switching could have on de-IFIP working group 6.5 on

international computer mes-sage services, Dr Uhlig, the chairman, told a panel ses-One of these - the use of computers to mediate human to human commu-nications in the form of electronic mail boxes - has been the subject of much discussion in and outside IFIP, especially by mem-bers of the DP community concerned with social and economic implications of

computers.

Taking part in the IPPP

Australian

AUSTRALIA is to bring into service by 1982 its own public packet switching service network which will run at 48,000 bits per second. Called Austpac, it will be similar to the UK's PSS system and will conform to the CCITT X25 and X28

The first switching centres are to be based at Sydney and Melbourne The packet mode terminals will be limited to 9,600 bits per second and asynchronous mode terminals, using a packet assembler/disas-sembler, will operate at up to 1,200 bps.

delivers

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systems quicker than we ever thought Mike Finch, Hospital Saving Association. Lo

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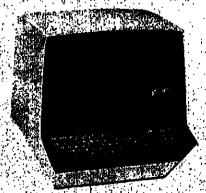
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The company will pay you an excellent starting salary of up to £9,500 p.a. together with other benefits. If you need to move house, there is a choice of attractive and affordable properties within easy reach and relocation assistance will be provided.

Call us now to find out more about these fine opportunities or send your C.V. to Sue Blundell at the address below.

271 High Street Berkhamsted, Herts. Phone: (04427) 74941

Permanent and **Contract Staff**

_COMPUTER ENGINEERS =

DRIFTING OR CRUISING?

- Snr. engineers with in-depth component level knowledge to work on large M/F systems. Positions in south and midlands - Degree or HNC preferred.
- IBM 370 engineers to work in London or S.W. area. CPU or peripheral experience.
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- Mini engineers with DEC, Prime or DG experience for turnkey systems supplier. London, south and south west.
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- Mini/word processor engineers, 1 year's experience for expanding company in central London.
- Trainees for terminal products, must have some electronics background plus full driving licence.

DEC 11 Engineer for contract in Kuwalt. Married or single

Capp Associates specialise in computer engineers, and can help you find a position suited to your skills and experience.

Our clients require personnel at all levels from junior engineers to UK service managers, so if YOU are looking for a step up, telephone or write to our Engineering Consultant - Phil Chapman.

ASSOCIATES

01-686 9693 AMP House, Dingwall Road **CROYDON CR9 9XA**

Senior systems analysts £10,000-£13,000 p.a.

Major development of real-time commercial systems

Our client, a leading publicly quoted group of companies, is Implementing major new computer developments for its subsidiaries and depots. The systems are operating on a network of PDP 11/34 and PDP 11/70 computers installed throughout the United Kingdom.

The Group now wants to strengthen its development team with the addition of Senior Systems Analysts to continue the development of systems and installation of computers. They will join a recently formed group computer services department with a policy of promotion from within. Present location is Kings Cross, moving next year to the Strand.

- Minimum of 5 years computer experience
- Ability to communicate at business and technical levels Ability to accept implementation management responsibility. at remote locations
- Opportunity to design advanced interactive systems

Season Ticket Loan Scheme * Discount on Company Products * 4 weeks holiday * Contributory Pension Scheme * Free Life Assurance.

For an application form please write to: John Hoakyns & Company Limited, Africa House, 64 Kingsway, London WC2B 6BL of telephone Joe Gilbert 01-278 2366

hoskyns

Sales Executive

c. £18.000 + Car London We have been retained by a highly successful systems company to recruit for them an

experienced Sales Executive. Randidates will be required to sell a range of equipment which is based on software driven terminal systems which, at entry level, are plug compatible. These emulate IBM, ICL, Honeywell and Univac, but have the capacity to support a wide variety of

software and hardware in the distributed processing marketplace. It is essential that applicants have at least three years experience and can provide a proven sales record to date.

Contact: David Hen Contact: David Hendry

Communications Consultants

London based

JBA have been retained by a leading computer and telecommunications consultancy to assist in the recruitment of high calibre technicians who will be based in London, although opportunities exist for work abroad as well as in the U.K. Selection criteria include a detailed knowledge in at least one or more of the following

- Packet Switch Networks
- Message handling and Front-end Systems
 Network architectures
- Protocol conversion Software Engineering

Candidates will have been working in one of the above areas for at least 6 years, either with a computer/communications equipment supplier, a consultancy, or a large data communications user organisation.

A good degree or equivalent professional qualification is required. Salaries, commensurate with experience, will be in the range £10,000-£15,000.

Contact: Margaret Stevens

Senior Analyst/Programmers

to c. £11,000 + benefits Dublin An established systems house operating throughout the republic from the Dublin office

currently have urgent need to strengthen their project teams. Working mainly on financial systems on IBM hardware, you will be responsible for assessing ellent requirements, designing, programming and implementing the specific systems and be involved with all aspects of customers support.

It is essential that applicants have sound commercial analysis knowledge with several years COBOL and DLI as well as good experience of a CICS system. You must also display the ability to communicate at all levels and be prepared to travel when

required. A negotiable salary is available, expenses and an annual bonus. **Contact: Brian Posties**

Software Engineers (Micros)

Our ellent, at market leader in the engineering industry, has established a new division in microprocessing, and now needs micro software expertise to fulfil current and future

It is essential to have at least two years experience of micro software development on industrial systems, a good educational standardic, a degree or equivalent in a science or related subject. A knowledge of INTEL machines would be a definite advantage. Candidates would ideally be in their late twenties and have the ability to communicate Contact: Janet Chilvers

Reservation Systems Maintenance Manager

Salary negotiable to Experience

We have been retained by a leading ferry operator to recruit for them an experienced computer professionar to take responsibility for the on-going maintenance and development of a sophisticated real-time reservation system.

The successful candidate will be required to liaise with outside software suppliers and

to co-ordinate the activities of user departments. A strong ICL background coupled with exposure to on-line systems is essential.

This is an unusually demanding role requiring a mature individual with sound administrative capabilities who is able to work under his/her own initiative. Contact: David Hendry An excellent salary logether with concessionary travel.

Communications Programmers - Babbage £8,000-£9.000

South West of London

Continuing expansion of our client's international Videotex business has created ... opportunities for GEC 4000 Babbage programmers in real-time and network systems Applicants should have at least four years programming experience and be capable of tackling packet switching colour and trustness graphics, in this fast moving and exciting field. Possible overseas travel.

Contact: Jim Bake

Mini Support **Analyst Programmers** £7,000-£8,500

Due to steady expansion, our Client, an Internationally known mini manufacturer, specialising in the marketing of banking, word processing and library circulation systems, wishes to recruit two programming professionals to join their development/support leam

development/support team
Aminimum of two years on-tine programming experience: preferably gained in a minienvironment, would be ideal; but consideration will be given to other high calibre
candidates. Training facilities and career prospects are excellent as this organisation
firmly support promotion from within.

JAMES BAKER ASSOCIATES, International Personnel Consultants, 32 Savile Row, London W1.

Tel: 01-439 9311.

MYRIAD

INTERNATIONAL DATA NETWORKS COMMUNICATIONS ENGINEERS

£7,000-£10,000 **READING BASE**

Due to the increasing importance and continuing growth of the data communications industry we are seeking additional engineers to join the Product Engineering Group of the industry's market leader. The company is experiencing ever-increasing demand for its sophisticated range of data communications products and istherefore expanding its engineering and support groups to cope with significantly increased workload.

The Product Engineering Group provides a high-level technical support service to users throughout Europe. This includes the provision of a consultancy service on network design and application, system specification and costing, monitoring new development in the market and training users.

The general requirement is for candidates who are educated to degree level in either Electronics, Physics or Computer Science with post-graduate experience in either data-communications technology, digital electronics or micro-processor application.

Dealing with prospects and users throughout Europe a degree of international travel will be involved and the ability to work without immediate supervision is therefore important. The company can offer extremely bright prospects for future career development coupled to a high commencing salary and valuable conditions of employment including comprehensive relocation assistance. Telephone to discuss these opportunities in detail or alternatively write to us quoting reference SW1/0412/CW.

PROGRAMMERS TO ANALYSTS

BROADEN YOUR HORIZONS MIDDX./SURREY £7,000-£9,000

Based on the Middlesex/Surrey border, our client is a well-known major organisation able to offer a secure future and positive career progression. They make extensive use of a wide range of hardware and successful candidates can expect to broaden their experience to encompass UNIVAC and the IBM 4300 series of computers.

Additional Programmers and Analysts are now required to enhance the development team which is about to embark on various new interesting projects,

PROGRAMMERS with a minimum of TWO YEARS' COBOL experience on any mainframe and ANALYSTS with a programming background plus two years' systems analysis, should contact Myriad now, quoting reference C1/0412/CW to learn how these vacancies can benefit you.

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YOUR FUTURE—MICROCOMPUTERS READING £6,500-£9,250

ARE YOU INTERESTED IN:

- ★ Information Technology.
- ★ Microprocessor Applications.

HAVE YOU:

- ★ One year or more Assembler experience.
- ★ Potential to utilise the latest advances in software technology.
 ★ Ambition to develop with a rapidly expanding and successful

Our client can offer unique opportunities for software programmers, at all levels, keen to pursue a career within an organisation recognised to be at the forefront of this major growth area.

The company offers excellent conditions of employment including a generous relocation package where appropriate. A first-class starting salary will be offered coupled to outstanding long-term career prospects. Telephoning now to discuss these positions in detail or write quoting reference SW4/0412/CW.

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y (AA Telephone 01-353 0981 24 hours

REAL-TIME SOFTWARE DESIGN

London

Up to £12,000

Our client is an established supplier of quality real-time and other computer bureau services to several blue chip organisations.

They are a technically adventurous organisation, having designed their own database and real-time systems. This has meant that they have a much more interesting technical section than is usual in a commercial environment. The result is an opportunity for graduates to be involved with real-time systems, database and data communications software.

A major enhancement of the twin CPU's together with a significant expansion of the intelligent terminal network will give further opportunity for the group (of four people) to develop their skills and

if you have substantial system software experience (perhaps five years or more) and are seeking a technical challenge in a company that provides significant benefits in addition to salary, and has offices in an interesting part of Central London close to tubes and with easy access to mainline stations, then ring us, in confidence, quoting reference 315. (Messages will be recorded after hours.)



datascene

BANKING D.P. PROFESSIONAL



Nordic Bank Limited, a leading London Consortium Bank, is seeking an experienced and professional person to augment its existing data processing

On-going development of the main banking system has created the need for a responsible, self-motivated person to assist with the enhancement of the data processing facility. The Bank currently utilises twin PDP/11/70 machines running in both real-time and batch mode, and a recent addition to the hardware has been a sophisticated word processing and telecommunications device capable of supporting multi-work stations.

The successful applicant will have developed his or her career at some stage in a BANKING ENVIRONMENT and have at least three years' AIMS experience allied to responsibilities as a senior programmer or team leader. The duties would entail a reasonably high programming content, but the candidate would also be involved in the training of existing programming staff, acceptance testing and user contact.

In addition to a competitive salary the usual bank fringe benefits will apply.

In the first instance please contact Roger Wilkins at Datascene quoting ref. R4584.

Datascene International Limited, Sceptre House, 169-173 Regent Street, London W1R 7FB. Telex: 25851.

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telephone 01-637 9611



Are you Sales Management Material?

Area Sales Managers - to £16K + Car

North and South of England and Scotland

Many salesmen believe that they have the qualities to be a successful sales manager, but are never given the chance to prove it. However, our client, a well-known distributor of a wide range of quality peripheral products is looking for mature professionals who know the market, and have the ability not only to sell, but to manage a sales office and motivate people under them

For more details contact Robin de Rouen or Tony McGrath on 01-637 9611

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has vacancies in the NEW YEAR for SYSTEMS ANALYSTS, DESIGNERS & PROGRAMMERS with knowledge of

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Opportunities exist in the North West and Yorkshire

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Our clients are developing a wide range of systems involving:

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Quadrant Software Ltd.

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PRINCIPAL ANALYST

FOR WORK ON CONTRACT APPOINTMENT BASED IN PARIS

EDG Engineering International Limited offers a contract to a suitably qualified Systems Analyst wishing to work in Paris: Minimum essential experience will be:

- 1. 5 years' general computing with 2-3 years' experience in systems analysis and programming for Data General Com-
- 2. 3 years' in Real-Time process control:
- 3. Experience of Pert evaluation and software quality assur-

Preference will be given to applicants with experience in modern telecommunication systems and the offshore oil in-

EDG Engineering International Limited is an established and important engineering design and management consultancy with global connections in the oil gas and general process industries. Contract terms offered by the Company will be attractive and will reflect the seniority and responsibility attaching to proposed post.

Please apply by telephone or in writing to:

Steve Rhodes (Present Manager) EDG ENGINEERING INTERNATIONAL LIMITED 42 Bond Street, Brighton, Sussex BN1 1RD Telephone (0273) 21911

SAUDI ARABIA Analyst/Programmers to £19,000 + car + accom.

This established software consultancy is continuing to expand rapidly and has an urgent requirement for experienced Analyst Programmers

Working in the areas of on-line commercial applications, including inventory control and accounting, you must be dedicated and energetic and be capable of taking projects through from feasibility to on-site implementation. Essential qualities are 3-4 years COBOL plus substantial analysis exposure during this

period, gained preferably on IBM SYS 34. Bachelor status is prefered but equal consideration will be given to married applicants without children. Tax free salary, plus furnished accommadation, plus a company car are included in an excellent package. Initial Interviews will be held in London.

Contact: Brian Postles Communications Consultants

London/Berkshire An internationally known systems house are currently looking for people experienced in the design and implementation of large scale distributed computer systems, it

would be preferable to have IBM experience but not essential, For senior appointments, candidates must have been involved in the implementation of a network using IBM SNA, it is essential for all candidates to possess a broad understanding of software and an in-depth knowledge of the concepts and practices of communications interface software. **Contact: Janet Chilvers**

Software Engineers

South West of London Further growth in our client's international Videotex business has created openings for

Software Engineers to work at various levels on exciting new product development. Candidates must be graduates with a minimum of 8 years experience, at least two on

Ability to develop high performance, multi-lingual software products to exacting new international coding standards is essential. Knowledge of packet switching, colour, business graphics or data-base indexing techniques would be an advantage. Opportunities exist for international travel

Contact: Jim Baker

Senior Systems Analyst

City £11,000+ We have been retained by one of the U.K.'s largest transport service organisations, to recruit an experienced systems analyst to fulfil a senior role within their development division. Systems are all of a financial/commercial nature, and are used in either online or real-time environments.

It is expected that candidates would have good academic qualifications, a sound data processing background, and the ability to deal with users and their problems.

Contact: Janet Chilvers

Analyst/Programmer

Hertfordshire

neg. to £10,000 Our elient, a well established marketing company who specialize in sound recording equipment, are currently expanding their D.P. department. They are developing a sophisticated real-time sales and distribution system as well as order processing and general batch, all of which use data base techniques.

They require an Analyst/Programmer to assist the Computer Manager in the

development and maintenance of their ICL 2904 site.

The successful applicant will be required to have a working knowledge of COBOL and be able to work under his/her own initiative.

An excellent salary coupled with attractive fringe benefits complete the package.

Contact: David Hendry...

Programming Team Leaders

City
Our Client, an international Shipping organisation, is embarking on a major programme of new applications development and is seeking two Senior Programmers to

cad existing project teams.
It is essential to have at least four years programming experience, consisting of two years on IBM mainframes using COBOL with extensive knowledge of OS/JCL. The ability to write program specifications and modularizations is of prime importance.

Senior Systems Analyst

Our client, a successful specialist engineering and manufacturing organisation, has an opportunity for a Systems Analyst who is looking for a career step with considerable Cundidates should be graduates, or professionally qualified, with an extensive systems

background in developing commercial applications, preferably in a manufacturing environment using ICL equipment. nt in D.P. development and applicants must have the personality, presence, leadership, intellect and capacity to deal with all levels of management and stall. Large Company benefits.

Contact: Jim

Programmers — Financial Systems

Rural Hampshire to £7,500 + Mortg. Subsidy etc. A large and expanding insurance Company are currently seeking experienced COBOL programmers to strengthen their project teams involved in development of sophisticated financial systems.

Current configuration includes: Redifon mint and Butroughs B6800 maintinume. Incorporating batch systems and on-line lesting facilities.

Experience must include 18 months COBOL not necessarily in a financial institution. An excellent training programme has been devised to assist current programs.

An excellent training programme has been devised to assist currer progression.

Absolutely first class package to include mortgage subsidy, low interest loans, sports and social club, generous relocation expenses, plus others.

Contact: Brian Postles

JAMES BAKER ASSOCIATES, International Personnel Consultants, 32 Savile Row. London W1. Tel: 01-439 9311.



MIDLANDS APPOINTMENTS TO SOLUTION OF THE PROPERTY OF THE PROPE



Advances in technology have made many users largely independent of computer specialists. Added to the financial cutbacks made by many companies, they result in fewer jobs for DP staff, and those few have very stringent requirements. John Wood reviews the lob scene, in which many pp people now find themselves unemplova-

Effects of recession on the job market by John Wood, managing director of EMS

AT the present time, it may prized Cobol programmer Redundancy is escalating tions and seminars tend to be tion, procuring software many years been prepared to well be of interest to the mar- with inadequate qualifications already within the industry finance directors, accounts, where possible from the externace property a 90% instantaneous by consultancies competing department achievement. against each other, often for the same basic jobs, in the hope of weathering the effects

available today are for obsolete; the market is unable because of the independence Such job roles will have to has not yet acknowledged.

specialists or technicians. The to value the product owing to of users. A high percentage of change into a business Management in the US, under the under the product owing to delegates attending exhibitive.

And the percentage of the independence Such job roles will have to has not yet acknowledged.

And yet acknowledged.

Are progressively having to distance the product owing to of users. A high percentage of change into a business Management in the US, under the product owing to distance the

At the present time, it may well be of interest to the mark to realise that recruitment demand on a national scale has dropped by approximately 75% throughout the market base. Almost all advertising nowadays is placed Cobol programmer and programmer with inadequate qualifications and in the Midlands alone, with the collapse of literally hundreds of significant-sized organisations which have now gone into liquidation, there are already several hundred department achievement.

Experience

quately funded multi- experience of minicomputer progressed in order to get nationals and long-established systems, preferably in addi-

ment that many hundreds of people either recently made redundant, or about to be made redundant within the budgets anyway.

The companies most able to safequately ride the effects of this recession, the large adeausely funded multiple experience of minicomputer of the recession, and often these companies advertise in demand nowadays are analysts with experience of online budgets anyway.

The companies most able to safequately ride the effects of this recession, the large adeausely funded multiple experience of minicomputer of the recently made redundant, or about to be made redundant within the DP industry, will either have to accept jobs in future at a significantly lower salary and seniority than those to which their careers had originally processed in order to get to get the recently made redundant, or about to be made redundant within the DP industry, will either have to accept jobs in future at a significantly lower salary and seniority than those to which their careers had originally processed in order to get to get the recently made redundant, or about to be made redundant within the DP industry, will either have to accept jobs in future at a significantly lower salary and seniority than those to which their careers had originally processed in order to get the recently made accountants themselves, should they go out and shop around for facilities management of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market penetration by the users. After that, the impact of market

nationals and long-established public corporations, have almost entirely re-organised their development planning within the DP sector and have cut back on recruitment altogether.

Again, an interesting fact becoming powerfully self-evident; the only jobs generally livaliable today are for specialists or technicians. The

sales managers and stock pro-duction managers, all seeking their own independent facility solution for line management cost, and to enhance the peri-

are already several hundred people available in the job market.

They will have to wake up central DP budget is excession manpower support.

With significant advances facilities which could be in technology, by the time It is possibly a fair statement that many hundreds of
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systems into the hands of the
accountants themselves, systems development, their

> a result of adequate invest-ment and forethought during the last decade, they are likely to be cut through lack of

Such technology also has a

The argument could be put forward therefore that the future direction of the industry will primarily be to buy in a new control system at the same time as a new computer and accept the obsolescence of both over five years.

As most software vendors

and producers will respon-sibly accept, the ultimate direction of primary software development towards a firmware marketing base is inevitable and the days of the average installation hierarchy

Awareness

been forced to educate itself into the performance, cost and capability of DP aids, there has been a growing awareness relating to signifi-cant cost savings of acquiring an external package sol and enhancing the odd 10% where necessary in order to gain rapid benefits and significant cost savings. The days of custom building for a high percentage of the industry are

have completed primary panies as their own products buted solutions via the soft lete with changing market de- companies are unlikely to be

datascene

CONTRACTS

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PDP RSX11M MACRO II PROGS. PDP RSX11M FORTRAN PROGS. PDP PROCESS CONTROL PROGS. PHILIPS ASSEMBLER PROGS.

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SALES EXECUTIVES

MIDLANDS AREA

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Experienced mini-computer salesmen are required to augment the existing highly successful sales team. We offer a stimulating working environment where the individual's contribution plays a significant part in the company's growth. As a successful individual in a highly professional company, an attractive earnings package will be provided commensurate with your and our success.

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APL PROGRAMMER

The International Air Transport Association (IATA) has an immediate vacancy for an APL Programme in its Geneva, Switzerland office.

dustry.

The successful candidate will be come a member of a project team which is currently developing the 'IATA Statistical Information System" on a Prime-550 computer. The development of this system will eventually consist of numerous statistical data collections relevent to the eviation in-

Main Tasks: tration of these data collections into the system

• participation in the development of a data retrieval/ manipulation language

development of tailor-made programs according to user specifications.

 β.S. in Computer Science. statistics, mathematics of

equivalent diploma • 2-3 years' APL programming experience preferably in a

commercial environment fluency in English

Detailed Curriculum Vitae should be forwarded to

Manager, Personnel

P.O. Box 160

1216 Cointrin - Geneva, Switzerland

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Sales Ledger

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4 For Other Use only

Company Ref. No.

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1981 will be a tough year — If only we could make politicians disappear! Complete the EMS career form today — Then we'll all face Mecca and pray — DP's tomorrow's answer today!

TOP TURNKEY SALESMEN
Midlands — £12,000-£20,000 package earnings
EMS urgently neuti sunior sales performers with a proven track record capable of marketing a minimum £200,000 worth of mini computer based systems inclusive of initial software revenues. We are at the present time involved in extensively marketing advanced and fully integrated on-line systems to the manufacturing, stockholding and distribution base throughout the UK, and urgently need highly motivated, experienced soles negletiators enpable of assisting us rapidly expand our marketing activities relatively only business with a minimum of group supervision. We are only seeking proven and acceptable of initiating supervision. We are only business with a minimum of group supervision. We are only seeking proven and acceptable of initiating relatively only business with a minimum of group supervision. We are only seeking proven and acceptable of initiating supervision. perionced regionators who can become involved in a last growing organisation and produce high personal sales based on individual moral. There are no cut-offs applied to sales earning levels and an opportunity for hardworking, conscientious salesmen is one not to be missed for candidates seeking to dramatically increase their own personal earning levels based upon results achieved. We have an extensive series of projects, quite dramatic plans for a successful salesforce during the 1980s. Contact us initially in the first instance for a meeting at our Birmingham Data Centre.

Telephone No.: 021-454 7906. John Wood or Diane Bosworth.

TURNKEY SALES MANAGEMENT

Midlands — Negotiable salary package. Board prospects

We urgently require a soundly experienced Sales Manager seeking the opportunity of joining a futuristic and dynamic Turnkey group, concentrating on supplying modularised software based systems to manufacturers, stockists and distributors. Additional vertical market products are nearing development completion including a car leasing and maintenance system, fresh food distribution systems through to electronics order processing and stock systems. A high degree of intellect and motivation will be required. Ideally the right candidate will be capable of recruiting and effectively controlling a sales leam to Ideally the right candidate will be capable of recruiting and effectively controlling a sales team to aggressively market an advanced series of systems. A significant personal sales achievement will be necessitated during the first two years to help initiate a significant market penetration. The unit currently has 11 systems sold, most marketed as development sites by the group MD. The urgent requirement now is to recruit a Top Sales Manager with the ability to achieve a personal sales target of at least £250,000 a year whilst starting to develop a high level sales team of two staff during 1981, and further growth development upon results obtained. Numerous excellent marketing aids are available, far more prestigious than the average Sales Managor has ever had to back up sales campaigns before, including video film aids and publicity material. An excellent apportunity to progress within a fast expanding group now exists. Board prospects could be available ultimately for adequate results and strong managerial control. This position will be Birmingham based in a modern central Date Centre. An attractive salery package is available with a sound career opportunity for a top productive managor. Progression will be singularly based upon results with a high dependence upon personal schievements during the next two years. Systems are based upon the very successful Honeywell Level 6 Series. No candidates under 28 years of age will be considered. A personal track record of achievements during the last 3 years will be sought, preferably with mini computer, or direct manufacturing system sales experience. Company care rably with mini computer, or direct manufacturing system sales experience. Company cars

Apply initially for application form: Diana Bosworth — 021-454 7906

PROJECT MANAGERS/SYSTEMS DESIGNERS

Birmingham — c.£9,000

The EMS Group are seeking additional experienced Project Managers capable of effective man management and able to handle multiple projects to enable us to install an increasing number of turnkey systems during 1981. The company already has a significant base of on-line modularised software development and the majority of tasks will involve building enhancements to pre-established systems and both planning and controlling system testing prior to client installation for a wide variety of UK products. A sound systems design knowledge will be importent as will the ability to undertake feasibility studies and propare accurate systems specifications on client requirements throughout a wide range of industrial and commercial trading sectors. Sound business communication is important, as will be the ability to control staff and effectively motivate a team with sound leadership abilities. We seek candidates able to accept a degree of pressure working to tight deadlines in a number of systems volatile industries. We do not staff and effectively motivate a team with sound leadership abilities. We sook candidates abia to accept a degree of pressure working to tight deadlines in a number of systems volatile industries. We do not envisage candidates under 28 years of age having attained the relevant degree of manpower control experience. Seleries will be negotiable with the apportunity of acquiring a company car for relevant positions once candidates have proven their ability to perform satisfactorily at a Senior Project Managerial level. We seak Managers capable of promoting and maintaining effectively designed systems in a disciplined and well-documented environment which will need their personal control and responsibility. We offer an interesting and varied range of projects, good future career development opportunities for key performers.
Telephone No.: 021-454 7805, lan Gapper.

PROJECT MANAGERS

Pre Sales Support — Midlands — from £9,000 p.s. & car
EMS are expanding significantly in the Turnkey Systems sector during 1981 and onwards. Having made a substantial investment approaching £1 million stready in the development of integrated on-line packages, we need experienced Systems and Business Analysts to assist the Sales campaigners in the areas of Fessibility Studies, Tender Preparation, Package Damonatrations, Seminar Presentations, through to Post Installation Training and Support. We are seeking soundly experienced Analysts with a minimum 7 years programming, proferably in Applications areas including Accounting, Stock, Purchasing Systems, Invoking, Ledgers and Payroll, You must have personally controlled a team responsible for designing and installation to the controlled at team responsible for designing and nstalling at least 3 full systems during the last 2 years, or at least 2 major systems. Ability to correctly size obs accurately, and to carry out detailed and accurate feasibility studies will be essential. Your projections are supported by the company's financial commitments. Professional competence is therefore essential. We in turn offer a very interesting and verted employment opportunity, involving negotiations covering the whole spectrum of industry and commerce, with on-going client contact at Board or Senior User level. These are positions snabling Project calibre staff to use the benefits of their experience to make a major Integer or positions problems in project calling start to use the benefits of their experience to make a major contribution to a last-expanding systems building group with some of the most advanced products in the industry. Some degree of mobility is important as a significant amount of commuting to client sites is involved with occasional overnight visits away from home, although naturally kept to low requirement levels. Sound presentation ability is important to accurately assess client requirements over and above our basic package facilities and to correctly size up the relevant mini or micro configuration required to support the required system. Attractive salaries and career opportunities are available for the right candidates. We envisage all candidates having progressed to a minimum £7,500 salary already before being ready to apply for these positions, Mini computer experience would certainly be a useful stiribute although not essential. Contact Ian Gapper — Systems Development Manager: Telephone No.: 021-454 7906

EXPERIENCED ICL 2903/4 ME29 COBOL PRO-

GRAMMERS

Similaryham or North Staffs Positions — 24,800-27,000 p.a.

EMS are developing an ICL Software Development Division based on in-house 2904 and remote 7502 equipment, providing client custom building and peckege development (soillties. A wide variety of projects exist with staff needed in an almost constent development role. Vacandes exist both at our Birmingham Data Centre which has 7502 video control Tariff Line connection to the Head Office itself! Occasional daily travelling to client sites will be involved. Ability to work in small self-motivated project teams will be important; as will the acceptance and personal commitment to achieve results within agreed time and date schedules. We are seeking candidates with a minimum of 1 year's experience of IQL 2900 equipment to work at dither centre.

Apply initially to Patrick Cox, Programming Manager, or Baverly Proudman.

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EMS at a sekting a number of experienced programmers for humerous installations throughout the UK espacially so for the Southern region at present. We need of ognammers for most major ranges of herdware, to work by maintrame and mini projects in a wide range of applications are is including on-line programming TP and Parabase. Any experience of minis can also be especially useful as this is the foremost developing market, of the 1980 is irrespective of salary or location, complete the career form today. You could be surprised at the large of opportunities available via EMS which are riever advantaged. Telephone No.: 0782-823665

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A chemicals based organisation which relies heavily upon computer systems are looking for a large number of additional experienced analysis, preferably having at least 1 year's commercial systems experience using IBM system 34. Some knowledge of DMAS or MAAPICS would be advantageous. The company are also prepared to take on trainee analysts who should preferably be educated to graduate standard either in computer science or business studies

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Cobol IDS-2 Honeywell Progs. — Level 66 — 6-12 months.

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IBM DOS Cobol — CICS Progs — Berks. — 9 months.

Honeywell IDS/TDS Progs. — Cobol — London or Home Counties — 6-12 months.

ICL New Range Analyst and Progs. — Cobol VME — London or H. Counties — 6-18 months.

IBM Cobol Progs. — South Cosst — 3-4 months.

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IBM Cobol Progs — DOS/VS — DL1 preferred — Essex — 6 months.

IBM Systems Prog — Assembler — Cobol — CICS — Essex — 3-6 months.

IBM Prog — QS — PL1 — CICS — Kent — 6 months.

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IBM OS/VS1 — Cobol — Progs. — Min. 5 years' experience — South East — 6 months.

Midlands

IVICUINITIES

ICL Cobol 1900 Progs. — George III — Crewe, Cheshire — 6 months.

PL/1 Progs. — IMS/DB/DC — Birmingham — 6-12 months.

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Honeywell Level 64 Cobol Progs. — Birmingham — 6-12 months.

Honeywell Level 64 Cobol Progs. — Birmingham — 6-12 months.

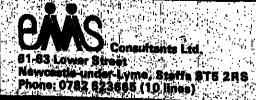
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Northern

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IBM Cobol Prog — CICS — Merseyside — 6 months.
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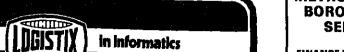
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Recruitment

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perionce and be familiar with commercia applications, e.g. Banking, Insurance, Stock Control, Order Entry and/or Accountancy, Whilst it is not necessary to Accountancy. Whilst it is not necessary to have exposure to any particular hardware, the company does have a stated preference for candidates with experience of DEC's P.D.P. range. Intervious will be preference. P.D.P. range. Interviews will be held in London within the next 14 days.

Ref: L/49/D

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ettions and of particular interest will be tions and or particular interest and didates who have specialist expertise in field of Communications, Networks, the field of Commu the field of Communications, Networks, Message Switching or Process Control. As a member of a small project team you will be involved in all stages of the design of a system through to the implementation and obviously liaise continuously with the client.

Ref: L/48/E.

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leading minicomputer manufacturer having its Head Office in the Thames Valley asseking several Development and Project Engineers as project team members within the Company's Product Development Unit. All applicants should preferably have an academic background in Electronics or Computer Sciences. These positions concomputer Sciences. These positions con-tein a high degree of digital circuit design will be highly rewarded.

and logic design whilst a thorough under-standing of software techniques is essen-tial. A knowledge of Assembler language gained with either a Manufacturer or Systems/Software House environment will reflect in the salary offered. For certain positions, where sustament liakon is positions, where customer liaison is

Mini/Micro S-W Development

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Candidates must have extensive com-puter programming expenience in For-tion and a knowledge of SPSS, prefer-ably in a PDP-11 environment.

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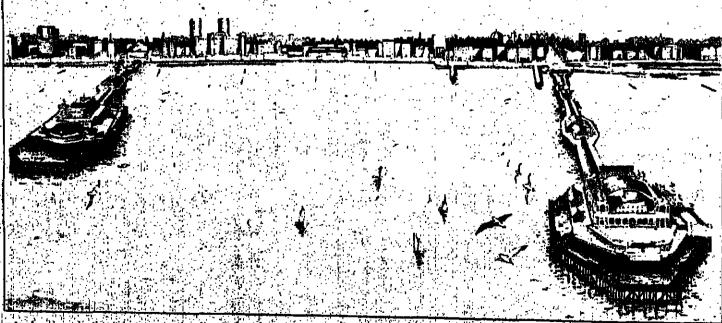
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Database..... Message switching.

Central process . .

Teleprocessing MIS*/CPA*/PERT*...

Magnetic tope....

Others (specify)....

Job Titles Project leader

Are you prepared to relocate in UK?[] Abroad?[! (tick box) **Experience** Place no. of years in box, e.g. IBM 360/370 **4**

Machines: Please specify model. IBM 360/370 IBM others (specify)... ICL 1900/2900 ICL others (specify) ...' Honeywell Univac.....

Other mini-computers. (specify)

Languages

Cobol.....

Auto*/easy*/usercode* Others (specify)....

Operating Systems George (specify) CICS*/HASP*/GRASP* DBOMP*/MVT*/IMS* Others (specify).

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SYSTEMS PROGRAMMERS

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e company bas a medium-disad tentaltation, using 1844 hardware for VM / 370 and 083/488 with CKG3/48 and 01/1 if you have east 7 years relevant experience for this Croydon job or any other forced location, we would like to black from you.

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PDP11 MACRO 11/FORTRAN IV. MUNICH

Immediate start for 6 month contract. All levels of person-

BANKING ANALYST/PROGRAMMER mmediate start for 6 month contract; also requirements for

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working on their own and to rigid standards

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Over four weeks' holiday, pension scheme, assistance towards removal expenses.

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ANALYST

The Delegates require programmer/qualyst to develop maintain and increase the programs related to the conduct of the Delegacy's examinations in the programs related to the conduct of the Delegacy's examinations. panence of FORTRAN le essential and knowledge of COBOL is de-stable. The successful candidate

shable. The successful csindidate will be expected to join the Delegacy as agon as possible end preferably not just than I March. 1981. The selary will be on the Ostford University. IA Scale (14795-1988), under review) at a statistic point determined by age. Qualifications and expensive, The person appointed will be required to belong to the University. Superannualism Scheme. Further, particulars, and forms of application, to be returned by Edday, 19 December, they be obtained from the Secretary of Lord Exeminations.

obtained from the Secretary of Local Exeminations: Ewent Place Summerion, Oxford Ox2 782 Johnston Ox187 January 131

using a large minicomputer con-figuration, which the Dalegacy is currently acquiring. Applicants, should preferably be between the ages of 24 and 35, and must have appropriate qualifications; ex-penence of FORTRAN is essential

TREASURER'S DEPARTMENT **ASSISTANT COUNTY** TREASURER (CTD105) CARMARTHEN

ment and operation of large scale data processing activities.

The computer installation consists of an I.C.L. 2960 with 2 Mb store exchangeable disc storage, and communication facilities providing an RJF service operating under DME. In addition to the wide range of financial and non-tinguncial applications operated for the departments of the County Council and the Dyiad-Powya Police Authority, facilities are also provided for the six District Councils of the Area.

The Officer appointed will lead a section of 32 staff and will be expected to make a positive management contribution to the work of the County Tresturer's Department and to extensive future system development: Application forms, returnable by the 18th December, 1980, a system from the Director of Personnel and Managemen

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s require Senior Programmers for contracts in North-West, with I Inimum of 2 years' experience in PASCAL, or CORAL, plus a good dwiedge of PDP11 systems. Good promotional prospects.

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After all, one of our current projects, the real-time software or Nimrod AEW Mk. 3 is the most technically advanced system

And because our software engineers work in small teams, each of which is responsible for the design of a specific aspect of system, from inception to implementation, you'd also be

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of these men and women has in common is a commitment to excellence gained in data processing and programming. Something we recognise and reward with a salary, career prospects and other benefits that are the hallmark of the

And Chris Hill on 01-953 2030 ext 3449 would like to tell u more. Once he has, we think you will want to become part of the Marconi team right away. Alternatively telephone 01-207 3455 anytime day or night.

If a telephone call is inconvenient, you can always write to us, with details of your career, at: Marconi Avionics Limited, Elstree Way, Borehamwood, Hertfordshire, WD6 IBR. Please quote reference MA 80/53.

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We wish to strengthen our development and maintenence team of herowers with appropriate communication links: ITEL AS/
to support a major programme of existing applications and new maintenence team of existing applications and new maintenence of the total company DP plan development puter southment.

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Project Leader - c. £8000 - £11,600

This new appointment, reporting to the Computer Development You should be a DP professional with a sound background if Manager, involves active participation in development projects at all stages from feesibility atudy to implementation including miliprocomputer systems analysis and design, project planning and project leading. Systems Analyst/Programmers,

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Activities include system and program specification, program You should have at least two years experience of commercial dealon, writing, testing, implementation and support; assisting programming Knowledge of COBOL or PU1, IBM 08 JCL and/or lin user training and listson with project and user management. Ininicomputer applications an advantage.

For all appointments, employment terms and prospects of advancement are excellent with generous re-location sestimates available if experiments. The positions are based in Basingstoke which is writhin stary reach of London yet has the advantages of a furnitudinate of London yet has a furnitude of Lond

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Designers and Program-Programmers and Ana lysts with strong PL/ wanted programming back-grounds, ideally with DB, TP or other specialist IBM knowledge, required for of Comms Systems, Ex pertise in X25, operating systems. Pascal and Assembler urgently req-UK. European and Middle East assignments operated by Bruish Systems House. uired for new and existing

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Analysts and Designers with experience of Macro l (under RSX-IIM), DG intel or 11 Assembler required for scientifictechnical projects cur rently being operated by UK Systems House over-

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Senior Programmer required by large IBM and Mint user for newly-created technical support role — experience of CICS, DL/1 and JSP desirable. Responsibilities include involvement in Systems Design, standards, etc. Large company benefits apply.

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Analysts and Programmers wanted to work on IBM compatible systems at European division of leading Computer Systems Manufacturer. The requirement is for Assembler, TSO and DB/DC experience. Relocation assistance and excellent benefits package.

£12-18K

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IBM COBOL and PL/I. minimum 4 years' ex-perience with knowledge of IMS, DL/1, CICS a considerable advantage, wanted for projects being operated by British Sys-

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2900 VME/B Analyst/Programmers and Analysts, COBOL programming back-

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COMPUTER WEEKLY CHRISTMAS PUBLISHING

ARRANGEMENTS

In view of the Christmas holiday the December 11th and 18th issues of Computer Weekly are being combined and published on December 11. The December 25 issue will not be published.

Classified copy for the January 1, 1981 issue should arrive no later than 10 a.m., Tuesday, December 23

Quadrant House, The Quadrant, Sutton Surrey SM2 5AS Tel. 01-661 0121

HERTS/ESSEX

Project leader level.

occurrence on the recruitment market involves managers higher level of management. hoping for job opportunities with foreign manufacturers setting up new UK-based helps establish true levels of operations. As one might expect, ex-

pectation does not match opportunity in many cases; selling role sometimes experwhen openings do arise, they are wont to offer less than the applicant's euphoric vision of good things to come might In many instances, these

companies wish to set up shop on low budgets after underestimating severely the investment required to establish a realistic market base, particuarly when sterling is strong.

The pressures and tension engendered by these factors often outweigh apparent advantages of "getting in on the ground floor" in a new ven-At the very least, it is a career opportunity which de-mands more critical evalua-

tion in advance than a normal

Commission

Financial implications o

New areas

must consider other

Puzzle Answei

1 0 4 3 1 7

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managerial opening.

GLOUCESTER ICL 2900 COBOL PROGS. IBM SYSTEM 34 RPG II PROGS.

ESSEX IBM COBOL AND MARK 4 PROGS. HONEYWELL COBOL PROGS.

STAFFS HONEYWELL L64 DPS4 COBOL

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Consists

The company has a medium-state introduction using 1814 his dyes of motor VM /370 and DOS /VSE with CIGS /VS and DIJ. If you have at least 2 years adjust steposterior for the Coyelon like in any other position of the country of the Coyelon like in the country of the Coyelon like in the country of the coyelon like in the country of the coyelon.

SYSTEMS ANALYSTS

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CONTRACTS

PDP RSX11M MACRO II PROGS. PDP RSX11M MACRO II PROGS. PDP RSX11M FORTRAN PROGS. PDP PROCESS CONTROL PROGS. PHILIPS ASSEMBLER PROGS.

PROJECT MANAGER

SOFTWARE

ENGINEERS

Support S'ware: Assembler/Compilers:

Linkage Editors; Down-Line Loaders; Pre-

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broaden your experience in these areas up to

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TO £12,000

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A large and well-established company in Hertfordshire requires your systems expertise. Business Analysis experience would be an added advantage. Excellent enefits are given.

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SOFTWARE

ENGINEERS

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£15K + O'SEAS

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(NW1135)

A network consultant with sound experience of IBM's SYSTEMS NETWORK ARCHITEC-TURE is required to accept this challenging position with our clients in Italy - attractive package and location offered. (PK1268)

DP MANAGER

PROJECT LEADER

Brand new project, lasting 5 years, involving

some travel throughout the UK and Europe.

5-6 years' on-line experience is essential with

end user training, implementation.

ESSEX

C £9,000

C £12,000

(PK1296)

00

Growing company with outstanding prospects seeks an Analyst/Programmer, familiar with accounts, to manage a small staff. You don't need to be a manager, just have the potential and RPG 2.

00

TO £10,000

SYSTEMS

TO £11,000

Degree + 3-4 years' experience of Real-time. RTL2, MACRO 11 or PDP 1 is and a scientific or industrial background. Package could include car. Relocation. (NW1280)

SYSTEMS

ANALYSTS

00 00

DP MANAGER

PROGRAMMER

W. COUNTRY

2 yrs' + installing, maintaining IBM operating systems and packages (in par-ticular CICS) and Assembler programming. MVS an advantage. Large expansion programme. Superb package inc. relocation and mortgage subsidy.

ANALYST/PROG.

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ICL, JCL, COBOL, RPG, commercial and accounting experience. Must have designed and implemented wide range of systems, prof. in COBOL. Relocation package, cheap housing area.

(NW1319)

SENIOR PROJECTS MANAGER

TO £12,000 + CAR

Young, dynamic team require leader with experience in consultancy, development and project management. Must be prepared to travel with scope for advancement at home and overseas (NW1327

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GROUP SYSTEMS CONSULTANT

C£9,500 + CAR

A large manufacturing company based in Berkshire are keen to recruit an Analyst/Programmer to fulfil a 'troubleshooting' role. IBM, RPG 2 and sound analyst experience are essential to sup-34s. Regular travel to company locations is envisaged. (PK1298)

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A good working knowledge of Univac Exec 8 and specific experi-

ence of at least one of the following items of Univac software is

Candidates should preferably be educated to degree standard or

equivalent and have around 4 years' experience in a Univac systems

or application programming environment. Assembler coding and

The starting salary is in a range to £12,000 and the excellent terms

and conditions of service are those expected of a major inter-

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pany Limited, BP House, Third Avenue, Harlow, Essex CM19 5AG.

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There is an immediate requirement for very highly qualified staff in one or more

A degree or equivalent is normally expected. International travel will be

Please reply enclosing career resume to: D. A. E. Maclaren, PACTEL,

required and fluency in English and one or more other European languages is

destrable. Age is not necessarily important, but applicants will need to have

A member of PA International

Software Engineering

Information Management

Project Management

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necessary: Exec 8, Fortran, COBOL, TIP/CMS or DMS.

systems software dump analysis experience is desirable.

Univac 1100

batch, interactive and on-line operations.

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BP Harlow

TREASURER'S DEPARTMENT TECHNICAL SUPPORT

PROGRAMMER A.P.8/8.O. 1 £8,780/£7,998 (from April 1981, £8,870/, £8,39)

Richdale is currently implementing VME2/C to run on its 2960 Mininterns. Conversion work will be out to a minimum by re-designing older systems. New developments are also planned.

Applications are invited from Programmers having a minimum of 2 years experience. VME/K training will be given as 1955-281y.

Application forms and further details are obtainable (by quoting lef, E317), from the Chief Personnel Officer, P.O. Box SS, Municipal Offices, Smith Street, Rochdale, OL18, IXQ (telephone, Rochdale, 47674, Ext. 652), to be received not leser than Thursday, December 18, 1980.

The Queen's University of Belfast SENIOR SYSTEMS

ANALYST

The Senior Revelopme. Analysis will manage the Respirational School occupants of the Respiration of the Senior School of the Port 1/24 Argostor Julianing under RSA-11M. In legislation the state assistable for developing additional assistable and a complete for developing additional assistable for developing additional assistable for developing additional assistable for developing a population of developing additional assistable for developing addition

SYSTEMS PROGRAMMERS

A FAIRLY regular greater achievement and petence and enhances job satisfaction.

> Those returning to a senior ience a sense of release restoring enjoyment to the working

> The challenge to self-determination in discarding day-today managerial pressures may bring about a realisation that management is an overrated thought to be a good idea at the time.

TRADER

PRODUCT NEWS

Printing machine

THE PROGRAMMABLE changing companies also need careful thought and it is sur-Printing Machine (PPM) is available in the UK from Soli prising how fringe benefits ac-cumulate to form a significant taire Business Systems. It is based on a 300 line per minut part of the sales manager's inmatrix line printer, and will produce characters up to 2.8 inches high and 2 inches wide. The PPM is supported As with a salesman, a large part of the sales executive's finance is likely to come from his established success. Beginning again elsewhere could have a severe effect on by 21 different bar codes, OCR A and OCR B character

printing, vertical printing and a line drawing facility. Prices start at £5,500. total carnings for a long Discounts are available for Unlike territorial salesmen, quantity orders and OEMs.

there is no real "market price" for a sale manager.
Total income within the computer industry is likely to fall Solitaire Business Systems (CW), 580-586 Chiswick High Road, London, W4 SRP. Tel: 01-995 3573. within the £16,000 - £25,000 range depending on job level

D-I-Y modem

and nature of company, with commission representing about one-third of the total. As in all sales posts, mobil-A SYNCHRONOUS modem for data transmission over a ity is essential to secure a new post in the shortest possible time, as management jobs are difficult enough to secure. distance of a few miles has been introduced by Micon. Called the Model 421, it is

part of Micom's Micro400 Local Dataset family. The The job-seeking candidate model operates at speeds to 19,200 bps over unloaded prieven further by expecting a post within walking distance—unless, of course, he or she lives in Central London. It is offered either in a

table-top enclosure or a rackmount chassis which holds 16 units and measures 514 inches high in a 19 inch wide cab-inct. The table top unit Factors like children at good schools and the overall weighs 2lb.
The model is designed for quality of one's life may mili-tate against moving. In these

officumstances; the sales man-ager who is not prepared to lively until "something turns alone version and \$260 as a Micom Systems (CW) He or she might take a rela 9551 Irondale Avenue, tively junior management Chatsworth, CA 91311, tively junior management USA Tell (0101-213) 822

post or even revert to territo-rial sales in a milieu, offering genuine career advancement. Full range

of move frequently proves a A DOT matrix printer, the happy turning point in an in A 1880 has been introduced dividual's career.

Moving into new areas sticompletes the company's mulates some people into range of printers, and is de-

AJ880 has been introduced by Anderson Jacobson. It completes the company's range of printers, and is designed for users not requiring the fadilities of a highly sophisticated printerplotter. The machine features the ASCII character set and RS 232C interface. It is a desk, for machine weighing: 22b and measuring 22 x 15.4 x 6.5 inches. It costs £779, or £949 with an A211 acous(Ic coupler.

upler, Anderson Jacobson (CW), 752 Deal Street, Slough, SL1 4SJ. Tel: 0753 25172. orac areas a a più a a fin a a bankara

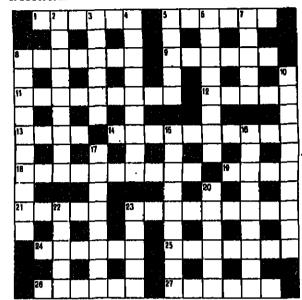
The 2 and 5 are terchangeable.

I had in lita

CW Prize Crossword 11

Compiled by Alec-Robins

A prize of £10 will be awarded for the first correct entry opened. The second and third solutions opened will receive £5 each. Entries to Crossword Competition, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, by first post, Friday, December 12. Please use a ballpoint to complete the



Backward bachelor taken 2. Mental institution, exteninto employment and reviled sive, with space all taken up

- 5. Tosses, we hear, with violent pangs (6)
- 8. Skate, perhaps, round pool with no front piece? That's unwise (7) 9. Unassuming, kind and
- 11,12. Deciphered, like articles in a closing-down sale?

 (7,2,5)

 13. A small number live in

 8. The police train a bit
- retirement it's dark and oddly? Definitely (3,7) very hard (4) 10. Prepare for battle, old fel-
- very hard (4)

 14. Suppliers of light vessel low, the final battle (10)

 15. Making about a pound abroad, dealing aparingly
- supporter (10) abroad, dealing sparingly 18. Lively dance causes a (6,3) storm tell one about it (10) 16. Pray for unlimited period 19. Something curvaceous - at the wicket, being an opener
- my goodness! (4)
 21, 23. Where you'll find no pld coppers asleep?
 (2,3,4,2,3):
 24. Clock that's musculine, not scooped out inside (6)
 25. Love, receiving allowance, gives formal address (7)
 26. Long to embtace listener, beloved one (6)

 at the wicket, being an opener (9)
 17. Rambling rose can't get one high up in the tree?
 (8)
 20. A vegetable too apt to get mashed! (6)
 22. Find whereabouts of overturned eastern vehicle (5)
 23. Loyal subject, for example, detected in
- beloved one (6)
 27. Channel, initially tranquil, but getting turbulent (6)

 example, detected in specific falsehood (5)

RULES AND CONDITIONS

1. Each competitor may submit no more than one entry.

2. The competition is open to all readers of Computer Weeklywith the exception of the staff of IPC Business Press Ltd, any printers employed by them or the hear relatives of any such staff.

3. The solution of each puzzle will normally be published in the

ROBOTICS PROGRAMMER



Commenturite salaryi
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3. The cane's a change from

the usual procedure (6)
4. Dry, awfully dry and heated (9)

5. Assembled up above the

Detective branch I set up

in control causes derision (8)
7. A portion of golden suet-

ANALYST/PROGRAMMERS London IBM Cobol/PL1/Mark IV

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(3821)



COMPUTER WEEKLY

CHRISTMAS PUBLISHING **ARRANGEMENTS**

In view of the Christmas holiday the December 11 and 18 issues of Computer Weekly are being combined and published on December 11. The December 25 issue will not be published.

Classified copy for the January 1, 1981, issue should arrive no later than 10 a.m., Tuesday, December 23.

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Salary, according to age, qualifications and experience on Principal Computer Officer Scale £11165-£13980 plus superannuation. Further Information obtainable from Director, Professor P. Jarratt — 021-472 1303, Ext. 2233.

Further particulars available from Assistant Registrar (Sol. and Eng.), P.O. Box 363, Birmingham, B15 2TT, to whom applications (3 copies) including full curriculum vitae and naming three refereas, should be sem by Monday, December 22, 1980. Please quote ref: CWZ7.

TREASURER'S DEPARTMENT

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A.P.5/8.0. 1 £6,750/£7,998 (from April 1981 £6,870/

Rochdale is currently implementing VME/K to run on its 2860 Mainframe. Conversion work will be cut to a minimum by ing older systems. New developments are siso Applications are invited from Programmers having a minimum of 2 years' experience. VME/K training will be given a

Application forms and further details are obtainable (by quoting ref. E317), from the Chief Personnel Officer, P.O. Box 68, Municipal Offices, Smith Street, Rochdele, OL16 1XG (telephone Rochdele 47474, Ext. 662), to be received not inter then Thursday, December 18, 1980.

UMIST

LECTURER IN SOFTWARE ENGINEERING

EF COM/224. A Lecturer is required in the Department of Computerion, to the if in on expanding programme of research and teaching in the area of software igneering. Applicants should have a PRD in computer science, or equivalent allifections and experience, and should have interests to one or, more of the

alary will be on the scale £6505 £11575 per and w COMPUTER OFFICER IN SOFTWARE

ENGINEERING COM/225. A Congputet Officer is required in the Department of Computer-ing one converse development and maintenance in support of twisters and ring in the area of sophetics engineering. Candidates should have a degree or relation under the programming of the

lelary will be within the farige C4/95-C9895 per enmitte. Requests for aphtication forms and further particulars, quoting the appropriate another be addressed to the Register, Room 86, UMIST, PO Soc. Marcheller MSO CO. The closing data is the 19th Occamber, 1990.

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Data Control Supervisor

£6.275-£7349 + Metropolitan weighting - Enfield

Eastern Gas of Enfield have just restructured various activities within the Management Services Department at their modern Tower Point offices in Enfield and now have an Important position available in the Data Control

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Salary offered is in the range of £6,725 - £7,349 + £536 p.a metropolitan weighting and a range of generous benefits, including subsidised staff restaurant, pension and sick pay schemes, etc.

For an early interview The Personnal Department,

Essiorn Gas, Tower Point, Bydney Road,

EASTERN GAS

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c. £12,000 Tax Free + Benefits

A substantial Danish group has a well established computer services operation working in Kuwait and expansion has created the need for a further computer field engineer to be responsible for equipment servicing throughout the country. Installations comprise DEC PDP 11 and Systime CPU's, with CDC disc units and Tektronic/Calcomp graphic display units.

The company provides business computer systems, software consultancy and computer based telephone systems. Experienced engineers with a sound background of servicing these types of hardware will find this an exceptional opportunity to join an effective and expanding European group.

An attractive salary is offered for the area together with a comprehensive benefits package including car allowance, return airfares to home country for 1 month's holiday and free furnished, air conditioned accommodation. The appointment is initially for two years with 4 weeks bonus on completion and the option to continue.

The requirement is urgent and interviews will be conducted in the U.K. week commencing 16th December 1980.

Engineers having relevant experience should telephone immediately to discuss the requirement and how to apply. Either single or married status is acceptable. Please quote reference CW 164-C.

ASSOCIATES

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1/4807

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J/4857

ICL 2900 OPERATOR c. £5000 HERTS. Manufacturing company in Herts require an operator for their busy 2904 installation. Pleasant working conditions, good training and productivity bonus are offered. J/4860

ICL 2900 OPERATORS LONDON £5500+ Three professional companies in Central London urgently require experienced operators for their installations: Hardware ranges from 2904 under EXEC 2S to twin 2960s using GIII and VME/B.

1/GEN

IBM OS OPERATORS SURREY

if you have at least 12 months' OS experience ideally with VSI, then this progressive king installation would be pleased to see you. Excellent training and career opportunity + cheap mortgage.

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PDP 11/70 OPERATORS LONDON £6-6500 One year's experience operating under RSTS, AIMS or RSX will give you the opportunity to join a well-established company with a computer system still in its infancy. This provides a good opportunity for operations staff to progress quickly into Technical Support or programming.

IBM SYS 34 OPERATOR W. LONDON New installation require an experienced IBM Systems 34 Operator to assist in the setting-up of the department. Good opportunity to expand with the company and progression to Programmer is possible.

BURROUGHS OPERATOR

Well-established bureau in the City of London require operators with around 9-15 months' experience of medium systems M PV. Career opportunities are good and could lead either

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Computer Manager

Cardiff c. £10,000

This challenging post is created by the installation of a Honeywell L64/DPS2 in the Membership Records Department of the Royal College of Nursing. The College is both the professional organisation and trade union for nurses, with a current membership in excess of 170,000 and growing. Computerisation of membership records and subscriptions is the initial and major task, to be followed by the provision of an in-house service to other departments of the College. The computer will use a network of terminals in Cardiff and London and candidates should have a sound knowledge of communications and database techniques.

Whilst salary and conditions of employment are good it is regretted that assistance with relocation costs cannot be given.

For further details and an application form telephone or write to the Personnel Officer, The Royal College of Nursing, Henrietta Place, London W1M 0AB, Tel: 01-580 2646.

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FOR FURTHER DETAILS OF THIS WEEKLY FEATURE CONTACT OWEN KELLY

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